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CITATO NEI: Zoological Record, A.S.F.A. (Aquatic Sciences and Fisheries Abstracts) e Thomson Scientific Publications (Biosis Previews, Biological Abstracts).

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Esempio di gerarchia sistematica e sinonimia:
Family Cardiidae Lamarck, 1809
Subfamily Cardiinae Lamarck, 1809
Genus *Acanthocardia* Gray, 1853
(type species *Cardium aculeatum* Linné, 1758)

Cardium indicum Lamarck, 1819
(Fig. 1A-D, Fig. 2C)

Cardium hians Brocchi, 1814: p. 508, tav. 13, fig. 6 (non Spengler, 1799).
Cardium indicum Lamarck, 1819: p. 4.
Cardium (Cardium) indicum Lamarck - Fischer-Piette, 1977: p. 112, tav. 10, fig. 4 (tipo).

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Esempi di citazioni:
... riportato da Richardson & Smith (1965)
... come noto in letteratura (Ross et al., 1993; Rosenberg, 1995, 1997; Michelini & Andriani, 2000)
... l'illustrazione originale (Torwald, 1879: p. 56, tav. 2, fig. 5).

Esempi di bibliografia:
SALAS C., 1996. Marine Bivalves from off the Southern Iberian Peninsula collected by the Balgim and Fauna 1 expeditions. *Haliotis*, **25**: 33-100.
GRILL B. & ZUSCHIN M., 2001. Modern shallow- to deep-water bivalve death assemblages in the Red Sea – ecology and biogeography. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **168**: 75-96.
BOSS K.J., 1982. Mollusca, in Parker S.P. (ed.), *Synopsis and Classification of Living Organisms*. Vol. 1. McGrow-Hill, New York: 945-1166.
CARTER J.G., CAMPBELL D.C. & CAMPBELL M.R. 2000. Cladistic perspectives on early bivalve evolution, in Harper E.M., Taylor J.D. & Crame J.A. (eds), The Evolutionary Biology of the Bivalvia. *Geological Society, London, Special Publications*, **177**: 47-95.
Vokes H.E., 1980. *Genera of the Bivalvia: a systematic and bibliographic catalogue (revised and update)*. Paleontological Research Institution, Ithaca, Edwards Brothers Inc., 307 pp.

ILLUSTRAZIONI

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Tutte le illustrazioni sono numerate progressivamente, in un'unica serie, con numeri arabi, nello stesso ordine in cui sono citate nel testo. Nelle illustrazioni composite, le singole immagini vanno indicate con lettere maiuscole, di altezza pari a 3-5 mm, usando un carattere *sans-serif*, quale Helvetica od Arial. Indicazioni ed abbreviazioni sulle illustrazioni vanno in minuscolo. Le illustrazioni vanno citate nel testo come figure, usando le abbreviazioni Fig. e Figg., come nell'esempio: Fig. 3, Fig. 6A-F, Fig. 5A, 7B, Figg. 3, 5. Le illustrazioni in altri lavori vanno citati come fig. o figg.
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Boll. Malacol., **51**: 1-2 (1, 30/05/2015)

Dacrydium angulare Ockelmann, 1983 (Bivalvia, Mytilidae): first record from the Mediterranean

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Abstract

Dacrydium angulare, a minute mytilid bivalve known from deep waters in the Eastern Atlantic, from Cape Verde to South Africa, is here recorded for the first time from Cap Corse, Northern Tyrrhenian Sea. The record is based on a single, complete shell, with soft parts and periostracum.

Key words

Dacrydium, Mytilidae, Mediterranean, Tyrrhenian Sea, new records.

Riassunto

*[*Dacrydium angulare *Ockelmann, 1983 (Bivalvia, Mytilidae): prima segnalazione per il Mediterraneo*]. *Dacrydium angulare* è un piccolo bivalve mytilide noto per le acque profonde dell'Atlantico orientale, da Capo Verde al Sud Africa. Questa specie viene segnalata per la prima volta per il Mediterraneo, esattamente per Capo Corso nel Tirreno settentrionale. La segnalazione è basata su un esemplare completo, contenente le parti molli e fornito di periostraco. Ciò suggerisce l'attuale presenza della specie in Mediterraneo.

Parole chiave

Dacrydium, Mytilidae, Mediterraneo, Mar Tirreno, nuove segnalazioni.

Introduction

During the study of deep water sediment samples from fishing vessels operating off Cap Corse (Northern Tyrrhenian Sea), a specimen of a little mytilid species was found. It turned out to be *Dacrydium angulare* Ockelmann, 1983, so far unknown from the Mediterranean.
Dacrydium Torell, 1859 is the type-genus of the mytilid subfamily Dacrydiinae Ockelmann, 1983. The genus includes small bivalves, with thin-walled, brittle, translucent, smooth shell. The shape is modioliform, with the umbo at some distance from the anterior end (Ockelmann, 1983; Salas & Gofas, 1997).
About 30 living species are known (Ockelmann, 1983), 19 of which at least are known from the Atlantic and (Salas & Gofas, 1997; Allen, 1998). A single species, uncommon but widely distributed, is known from the Mediterranean, *D. hyalinum* Monterosato, 1875, living on infralittoral and circalittoral bottoms, on hard and gravelly substrates with coralline algae (Salas, 1996).

Systematics

Family Mytilidae Rafinesque, 1815
Subfamily Dacrydiinae Ockelmann, 1983
Genus ***Dacrydium*** Torell, 1859

Dacrydium angulare Ockelmann, 1983
(Fig. 1B)

Dacrydium angulare Ockelmann, 1983: pp. 114-118, figs. 46-48, 51.
Dacrydium angulare - Salas & Gofas, 1997: p. 266, figs. 15-19.

Material

A single specimen, consisting of a complete, closed shell with dried soft parts and periostracum (**Fig. 1B**), from off Cap Corse, 400 m depth (September 2009). Size 3.2 mm in length.

Description

Shell minute, fragile, hyaline, semi-transparent. Profile modioliform, with antero-ventral margin rather acuminate. Antero-dorsal margin sloping (about 40 °) to the dorsal margin; ventral margin straight; posterior margin strongly convex. Umbo small, not markedly prominent, at mid length of antero-dorsal margin. Protoconch bordered by a narrow smooth edge. Valve smooth, with only fine radial threads on the umbonal region. Hinge with a broad primary inner ligament under the umbo and 5-7 small narrow, divergent denticles above the anterior part of the ligament. A long series of narrow parallel teeth from above the ligament up to about half of dorsal posterior margin. A relatively strong dorsal ridge or buttress runs from umbo to mid dorsal side. Periostracum greenish-yellow, shiny.

Remarks

At first, the specimen was identified as an unusually large shell of *Dacrydium hyalinum*, but under closer

Fig. 1. **A**. *Dacrydium hyalinum* Monterosato, 1875, 2.3 mm, Capraia I., Tuscan Archipelago, 180-200 m (left external view). **B**. *Dacrydium angulare* Ockelmann, 1983, 3.2 mm, Cape Corso, 400 m (left external view).

inspection it turned out to be *D. angulare*, with its distinctive outline, characterized by a prominent and somewhat acuminate antero-ventral margin.

The Mediterranean species *D. hyalinum* (**Fig. 1A**) is smaller, with a more rounded profile, a secondary ligament and a smooth umbonal region. *D. angulare* shares with *D. vitreum* (Holbøll in Møller, 1842) and *D. ockelmanni* Mattson & Warèn, 1977 the hinge characters, with only primary ligament and small number of anterior teeth.

Dacrydium angulare is somewhat similar to *D. ockelmanni* in outline (Warèn, 1991, fig. 40A-C; Salas & Gofas, 1997: figg. 7-12), but the antero-ventral margin is only slightly protruding and markedly less acuminate than in *D. angulare.*

Bonfitto et al. (1994, figg. 31-32) reported scant material (one valve and few fragments) of *D. ockelmanni* from deep-sea dredging off Sardinia, thought to be a Last Glacial fossil. The same species was also recorded by Salas & Gofas (1997) from off the Mediterranean France (500-800 m) and tentatively considered as a Pleistocene fossil.

Dacrydium vitreum (Warèn, 1991, fig. 40D-F; Salas & Gofas, 1997: figg. 2-6) has thin radial threads on the umbonal region as *D. angulare*, but a very different outline. The other species of *Dacrydium* so far known are markedly different in shell characters from *D. angulare.*

This species has a wide distribution along in the Eastern Atlantic, from the Cape Verde Basin to the Cape Basin (Mattson & Warèn, 1977; Salas & Gofas, 1997). The fresh conditions of the specimen from the Tyrrhenian Sea suggest the occurrence of this species in the Mediterranean, though apparently with a limited distribution. It is unlikely that *D. ockelmanni* is a recent immigrant, due to its depth range, well beyond the Gibraltar sill depth. Rather, it is hypothesized that this species is present in the Mediterranean since the Plio-Pleistocene.

Acknowledgements

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A new Mediterranean *Monophorus* species (Gastropoda: Triphoridae)

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Abstract

A new Mediterranean triphorid gastropod, *Monophorus amicitiae* n.sp., is described from the Northern Tyrrhenian Sea. It is assigned to *Monophorus* on conchological characters only, and is compared with similar species.

Key words

Triphoridae, *Monophorus*, new species, Mediterranean, Tyrrhenian Sea.

Riassunto

[*Una nuova specie mediterranea del genere Monophorus (Gastropoda: Triphoridae)*]. Una nuova specie di Triphoridae viene descritta dai fondali coralligeni del Mar Tirreno settentrionale (coste della Toscana). *Monophorus amicitiae* n.sp. è assegnato al genere *Monophorus* solo sulla base dei caratteri conchigliari, non essendo stato possibile studiarne la radula. La nuova specie è confrontata con alcune specie simili, e in particolare con *Monophorus alboranensis* Rolán & Peñas, 2001, verso la quale la nuova specie presenta maggiori somiglianze.

Parole chiave

Triphoridae, *Monophorus*, nuove specie, Mar Mediterrano, Mar Tirreno.

Introduction

The Triphoridae is a species-rich family of marine spongivorous microgastropods, characterized mostly by sinistral (left-coiled) shells. The family has a world-wide distribution with a maximum diversity in the tropical Indo-Pacific (Marshall, 1983). This group is yet poorly known (Albano et al., 2011), and thorough studies are only available for few areas: Australia (Laseron, 1958; Marshall, 1983), Mediterranean and East Atlantic Ocean (Bouchet, 1985, 1997; Bouchet & Guillemot, 1978; Fernandes & Rolán, 1988, 1991; Rolán & Peñas, 2001) and West Atlantic Ocean (Rolán & Fernández-Garcés, 1993, 1994, 1995, 2007, 2008; Rolán & Luque, 1999; Fernandes et al., 2013). The Triphoridae from the Mediterranean and adjacent Atlantic seem to be fairly well known, since a single new species has been described from European waters in recent years (Rolán & Peñas, 2001) and another species is added to the Mediterranean fauna in the present work.

Material and methods

Abbreviations and acronyms

Dn: diameter of the first protoconch (nucleus) (in µm); Dp: total diameter of the protoconch (in µm); H: maximum height (in mm); Hp: total protoconch height (in µm); Nwp: number of protoconch whorls; Nwt: number of whorls of the teleoconch; SEM: scanning electron microscope; sh(s): shell(s); sp(s): specimen(s) with soft parts; SII: Start of spiral cord 2 (whorl); W: maximum shell width (in mm); H: maximum shell height (in mm). APC: Attilio Pagli collection (Lari); ARC: Alessandro Raveggi collection (Firenze); BAC: Bruno Amati collection (Roma) CSC: Carlo Sbrana collection (Livorno); LRC: Luigi Romani collection (Lucca); MNHN: Muséum national d'Histoire naturelle, Paris; RRC: Romualdo Rocchini collection (Pistoia): SBC: Stefano Bartolini collection (Firenze).

Material examined

In addition to the material of the new species, listed below, other material was examined for comparisons.
Monophorus cf. *amicitiae,* 1 sh, off Capraia Island (Livorno, Italy), 200 m depth, H 6.85 mm, apex broken (APC).
Monophorus alboranensis Rolán & Peñas, 2001, 1 sh, Almeria (Spain), 50 m depth, H 6.6 mm (APC) **(Fig. 2A, B**); 1 sh, La Herradura (Spain), 40 m depth, H 6.8 mm (ARC).
Monophorus erythrosoma (Bouchet & Guillemot, 1978), *c.* 50 shs from many Mediterranean localities (LRC and SBC).
Monophorus thiriotae Bouchet, 1985, *c.* 30 shs from many Mediterranean localities (LRC and SBC).
Monophorus perversus (Linnaeus, 1758), 26 shs from many Mediterranean localities (LRC and SBC). *Similiphora triclotae* Bouchet, 1997, 11 shs from many Mediterranean localities (LRC and SBC).
All material was picked up from bioclastic bottom samples collected by SCUBA diving or trawled by local fishermen. Shells were studied with a stereomicroscope.

Photos were taken with a digital photocamera and SEM Philips XL30.
The teleoconch spiral cords are numbered from the adapical one, cord 1 being the subsutural cord with subsequent cords on the teleoconch whorls referred to as cord 2,3, etc. (Marshall, 1983). The protoconch whorls are counted according to the method as described by Verduin (1977).

Systematics

Class Gastropoda Cuvier, 1795
Subclass Caenogastropoda Cox, 1960
Superfamily Triphoroidea Gray, 184
Family Triphoridae Gray, 1847
Subfamily Triphorinae Gray, 1847

Genus ***Monophorus*** Grillo, 1877

Type species: *Trochus perversus* Linnaeus, 1758 (by monotypy)

Monophorus amicitiae n. sp.
(Figs 1A-G; 2C-G)

Type material and type locality

Holotype: Fetovaia (Elba Island, Livorno, 42°43° N, 11°10° E), 30 m depth, Team HYDRA-Institute legit, 21.03.2001, H 5.65 mm, W 1.45 mm (MNHN IM-2000-28031). Paratype A: 1 sp, from type locality, H 5.35 mm (LRC). Paratypes B and C: 2 shs, Tuscan Archipelgo, H 6.10 mm and 4.70 mm (RRC). Paratype D: 1sh, Capraia island (Livorno), 200-240 m depth, H 4.05 (last whorl lost) (BAC).

Other material

Calignaia (South of Livorno), 1 sh, 20 m depth, H 4.85 mm (CSC).

Etymology

From the Latin word *amicitia* meaning "friendship", after the several friends who helped me in many ways during my malacological work and beyond.

Description of type series (holotype data in parentheses)

Shell small, slender, subcylindrical, quite solid, sinistral. Dimensions: H 4.70-6.10 (5.65) mm, W 1.25-1.50 (1.45) mm. Protoconch multispiral, cylindrical, of 2.7-3 (3) whorls, height 420-445 (430) µm, width 310-330 (315) µm. First whorl 220-230 (230) µm in diameter, with a microsculpture of axial and spiral threads forming a net, subsequent whorls with two spiral cords crossed by numerous thin axial ribs. Protonconch/teleoconch transition quite clearly delimited, characterized by the fusion of the spiral cords into one keel continuing with teleoconch cord 3; cord 1 appears concurrently, very close to the suture. Teleoconch of 10.8-11.4 (11.2) flat-sided whorls, with axial ribs crossed by spiral cords forming nodules at intersections, nodules rounded, not shouldered. Suture shallow but well-defined. Spiral cords 1-3 strongly nodular: 1 and 3 appearing immediately; 2 starting as a thread at whorl 5.5-7.5 (5.5), remaining smaller until penultimate whorl of adult, wher it is equal to the others. On the body whorl nodules decrease in size from cord 1 to 3. Base quite rounded, with four additional cords: cord 4 irregularly nodulous (slightly crenulated); cords 5 to 7 smooth, decreasing in size, the last two adherent to the siphon. Spiral cords without additional duplications at the end of last whorl. Axial ribs opisthocline, evenly traversing whorls, evanescent below cord 4, numbering 22-25 (24) on the last whorl. No axial sculpture below cord 5, except growth lines. Spiral and axial sculpture weaken approaching the outer lip. Aperture subquadrate with a small posterior sinus; opisthocline viewed by side, as cord 4 protrudes forming a sort of keel. Outer lip sharp. Columellar callus whitish, more evident near the columellar-siphonal border. Anterior siphonal canal oblique, tubular, rather long, almost closed at its base (partially broken in the holotype). Shell surface glossy, with only very weak growth lines, without microsculpture. Colour cream uniform except the base of body whorl that is light brown (in the holotype and paratype A the first two whorls of teleoconch are also darker). Colour of the interspaces between nodules of the same colour as nodules. Protoconch whitish. Periostracum extremely thin and transparent. Animal unknown, paratype A had dried soft parts inside, showing a light yellowish colour. Operculum very thin, almost transparent, ovoidal and paucispiral (about 2.5 whorls), with subcentral nucleus, dimensions 620 µm x 500 µm. Radula unknown.

Remarks

The classification of the Triphoridae is far from being settled, despite the basic work of Marshall (1983). Most species are only known by shells and many species are yet undescribed. The radular morphology, known for few species, is currently regarded crucial for genus level allocation (Marshall, 1983, Bouchet, 1985). Unfortunately the radula extraction from the single dried specimen was unsuccessful, so the generic placement of the new species relies only on the shell features.
M. amicitiae n.sp. has a teleoconch sculpture quite common within the family. The cancellate pattern with three nodular spiral cords (the intermediate arising later) is present in *Monophorus* Grillo, 1877, *Obesula* Jousseaume, 1897, *Cheirodonta* Marshall, 1983, *Similiphora* Bouchet, 1985, *Marshallora* Bouchet, 1985 and *Pogonodon* Bouchet, 1997, among the genera with European representatives. The net-sculptured nucleus and subsequent bicarinate whorls are typical to *Monophorus* Grillo, 1877 and *Sagenotriphora* Marshall, 1983. These two genera have markedly different radular patterns, allowing their clear cut
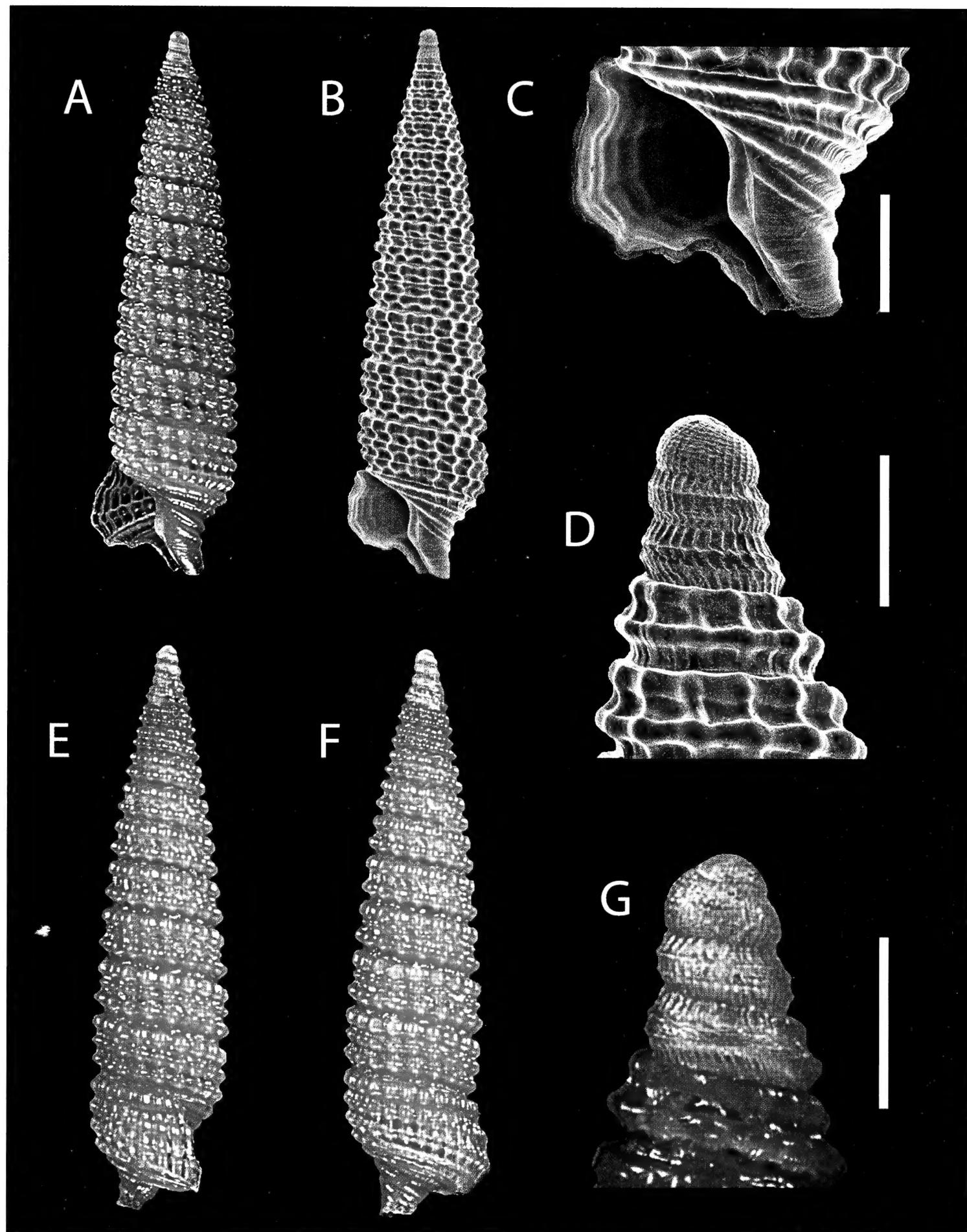
Fig. 1. **A-G.** ***Monophorus amicitiae*** n.sp. **A-D, G.** Holotype, 5.65 mm, Fetovaia (Elba Island, Livorno) (MNHN IM-2000-28031): **A, B**. Shell; **C.** Aperture (scale bar = 500 µm); **D, G.** Protoconch (scale bars = 300 µm). **E, F.** Paratype A, 5.35 mm, Fetovaia (Elba Island, Livorno) (LRC).

Fig. 1. **A-G.** ***Monophorus amicitiae*** n.sp. **A-D, G.** Olotipo, 5,65 mm, Fetovaia (Isola d'Elba, Livorno) (MNHN IM-2000-28031): **A, B**. Conchiglia; **C.** Apertura (scala = 500 µm); **D, G.** Protoconca (scala = 300 µm). **E, F.** Paratipo A, 5.35 mm, Fetovaia (Isola d'Elba, Livorno) (LRC).

separation. In the present case, without information on the radula, it is more prudential to assign *M. amicitiae* n.sp. to *Monophorus*, widespread in the European area, while *Sagenotriphora* has an Australasian and probably Western Atlantic distribution (Bouchet, 1985, 1997; Marshall, 1983; Rolán & Fernández-Garcés, 2008).

The most striking character of *M. amicitiae* n.sp. is the apex morphology (first noticed by B. Amati, pers.

comm.): the protoconch, although multispiral, has only 2.7-3 whorls, the nucleus is relatively large compared to the subsequent whorls, giving to the protoconch a clearly cylindrical profile. All the sinistral Mediterranean Triphoridae species differs from the new species by having longer protoconchs (more then 3 whorls) and a smaller nucleus, ornated with papillae or spiral threads (Bouchet, 1985, 1997).

Monophorus alboranensis (**Fig. 2A, B**) is the closest species. It shares with *M. amicitiae* n.sp. a light yellow shell but its colour is often not uniform, it attains a larger size, and has a more conical outline. On the body whorl spiral cords 4-5 are nodulous, 6 is irregularly nodulous and only 7 is smooth. The protoconch is larger, darker, with at least one more whorl (Rolán & Peñas, 2001; Gofas et al., 2011). *M. perversus* has more teleoconch

Fig. 2. **A-G.** *Monophorus* spp. **A, B.** *Monophorus alboranensis* Rolán & Peñas, 2001, 6.6 mm (Almeria, Spain) (APC): **A**. Shell; **B.** Protoconch. **C-G.** *Monophorus amicitiae* n.sp.: **C-F.** Paratype A, 5.35 mm, Fetovaia (Elba Island, Livorno) (LRC); **C**. Shell; **D.** Operculum; **E.** Siphonal canal; **F**. Shell base. **G.** Holotype, protoconch, Fetovaia (Elba Island, Livorno) (MNHN IM-2000-28031) (scale bars = 400 µm).

Fig. 2. **A-G.** *Monophorus* spp. **A, B.** *Monophorus alboranensis* Rolán & Peñas, 2001, 6,6 mm (Almeria, Spain) (APC): **A**. Conchiglia; **B.** Protoconca. **C-G.** *Monophorus amicitiae* n.sp.: **C-F.** Paratipo A, 5,35 mm, Fetovaia (Isola d'Elba, Livorno) (LRC); **C**. Conchiglia; **D.** Opercolo; **E.** Canale sifonale; **F**. Parte basale della conchiglia. **G.** Olotipo, protoconca, Fetovaia (Isola d'Elba, Livorno) (MNHN IM-2000-28031) (scala = 400 µm).

whorls, is more elongate, and is darker in colour with a pattern of blotches of white and brown. The protoconch is quite variable but typically has weaker sculpture and a more conical outline. *M. thiriotae* and *M. erythrosoma* have a larger, regularly conical shells, the protoconchs are distinctly pointed. The colour pattern is darker with brownish background colour and lighter nodules in *M. thiriotae*, while *M. erythrosoma* has a monochrome brown-red shell (Bouchet, 1985, 1997). *Monophorus* cf. *thiriotae, M. pantherinus* Rolán & Peñas, 2001 and *M. verdensis* Fernandes & Rolán, 1988 have somewhat cylindrical protoconchs, but teleoconch sculpture and color are very different from those of the new species (Fernandes & Rolán, 1991; Rolán & Peñas, 2001; Rolán, 2005). Spiral cords on the body whorl are similar in all these *Monophorus* species (see above) and differ from *M. amicitiae* whose cord 4 is not distinctly nodulous and cord 5 is smooth. The two West Atlantic *Monophorus* species have very distinct shell features (Rolán & Fernández-Garcés, 1994). *Similiphora triclotae* Bouchet, 1997 bears a superficial resemblance to the new species in colour pattern, but the shell morphology is different. A shell found near Livorno matches *Monophorus amicitiae* n.sp. in colour, sculpture and protoconch outline (H 4.90 mm, W 1.70 mm, Nwt 9.5, SII 6.4, Hp 485 µm, Dp 335, Dn 175 µm, Nwp 3.4) but differs by being wider (lower H/W) and by having a more pointed protoconch. These differences could be due to intraspecific variability, more material is needed to confirm this view. Another shell from Capraia Island has strong affinity to *Monophorus amicitiae* n.sp. in colour and sculpture, but it is larger and lacks the protoconch, so it cannot be univocally assigned to the new species.
Even if an Indo-Pacific origin cannot be completely ruled out, a bibliographical survey failed to find similar species (Hinds, 1844; Issel, 1869; Jousseaume, 1884, 1896; Watson, 1886; Tryon, 1887; Hervier, 1898; Hedley, 1899, 1903; Baker & Spicer, 1935; Laseron, 1958; Keen, 1971; Kay, 1979; Powell, 1979; Okutani, 2000 Jay, 2007; Poppe, 2008; Severns, 2011). An Erythraean origin seems unlikely, as no similar species is known from the Red Sea (B. Sabelli, pers. comm.). Only one triphorid from that area, *Metaxia bacillum* (Issel, 1869), has settled along thr Eastern Mediterranean coasts (Zenetos & al., 2010). The lack of alien triphorids is probably due to the absence of suitable hosts, considering the feeding habits of the family. The range of *M. amicitiae* n.sp. restricted to the Northern Tyrrhenian Sea, with no intermediate records from Eastern Mediterranean, supports this hypothesis.

Distribution

The new species is only known from the infralittoral zone of the Northern Tyrrhenian Sea. Shells were found in shell grit containing species commonly found in coralligenous bottoms, including some triphorids: *Metaxia metaxa* (Delle Chiaje, 1828), *Marshallora adversa* (Montagu, 1803), *Obesula marisnostri* Bouchet, 1985, *Monophorus thiriotae* and *M. erythrosoma*. Shells in RRC, labelled generically "Tuscan Archipelago" were associated to the same species. Deeper records from deep waters sare probably due to shell material swept from shallow waters.

Conclusions

Monophorus amicitiae n.sp. is apparently a very rare species. The area fom which it is reported has been thoroughly investigated for decades, and several thousand of shells of triphorids originating from that area have been examined.
Triphorids are hard to identify: many species often share a similar shell morphology and the protoconch (essential for a correct determination) is frequently missing or worn. They have a peculiar habitat, supposedly being in constant association to Porifera (Fretter, 1951; Marshall, 1983). Anyway, surveys in the Livorno area focused on infralittoral sponges, did not yield any triphorids which instead were found on algae. These two factors, the difficulty of identification and specimens occuring on rare or cryptic hosts, can explain the scantness of collected shells.

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Segnalazione di due specie di Coralliophilinae (Gastropoda, Muricidae) per lo Stretto di Messina

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Riassunto

Vengono segnalate per l'area di Scilla (Calabria, Stretto di Messina) due specie viventi di Coralliophilinae: *Babelomurex tectumsinensis* (Deshayes, 1856) e *Coralliophila hauiri* Cossignani, 2009. Per la seconda specie si tratta della prima segnalazione per le acque italiane. Entrambe le specie provengono da fondali coralligeni a ricchi popolamenti a cnidari.

Parole Chiave

Coralliophila, *Babelomurex*, coralligeno, molluschi di grotta, Calabria-Stretto di Messina.

Abstract

[*Record of two Coralliophilinae species (Gastropoda, Muricidae) from the Strait of Messina*]. Two Coralliophilinae species are recorded from Scilla, Strait of Messina, *Babelomurex tectumsinensis* (Deshayes, 1856) and *Coralliophila hauiri* Cossignani, 2009; the latter is recorded for the first time from Italian waters. Both specie were found alive on coralligenous bottoms off Scilla with rich cnidarian communities.

Key Words

Coralliophila, Babelomurex, coralligenous, cave molluscs, Strait of Messina.

Introduzione

Le ricerche sui fondali di Scilla (**Fig. 1**). compresi nel Settore Biogeografico Marino Italiano 4 (Bianchi, 2004), che si identifica con l'Area marina dello Stretto di Messina, hanno contribuito a documentare la notevole diversità biologica esistente in questo micro settore del Mediterraneo centrale (Vazzana, 2011).
Recentemente sono state raccolte due specie poco note di Coralliophilinae (Muricidae), *Babelomurex tectumsinensis* (Deshayes, 1856) e *Coralliophila ahuiri* Cossignani, 2009, trattate in questa nota.

Materiali e metodi

Gli esemplari di Coralliophilinae sono stati raccolti durante le numerose immersioni subacquee con autorespiratori sui fondali di Scilla. Per una descrizione delle caratteristiche ambientali dell'area, si rimanda a Vazzana (2010, 2011).
A circa 150 m a largo della Rupe di Scilla, su un fondale detritico degradante verso il largo, si erge una fila di pinnacoli rocciosi poco distanti tra loro, denominati Primo Dente e Secondo Dente di Skylla, fra 35 e 55 m di profondità (**Fig. 1**). Tra la base esterna del Secondo Dente di Skylla e il terzo pinnacolo roccioso (Terzo Dente), si colloca una grotta non profonda denominata "Grotta dei Gamberi" (38°15'25.05"N, 15°42'46.11"E). Sia per la profondità (52 m), sia per l'esposizione a nord, tale cavità mostra le caratteristiche degli ambienti di Grotta

Fig. 1. Ubicazione degli scogli sommersi al largo di Scilla. L'asterisco indica la grotta sottomarina da cui proviene il materiale studiato.

Fig. 1. Location of the submerged rocks off Scilla. The asterisk indicates the submarine cave from which the study material comes.

Semi-Oscura (G.S.O. Di Péres & Picard, 1964; Palazzi & Villari, 2000) e della "Twilight Zone" (Bo et al., 2009, 2010).
Gli esemplari studiati sono stati raccolti sulle pareti della grotta tramite spazzolatura e nel sedimento organogeno presente sul fondo della grotta.
Gli esemplari studiati fanno parte della collezione malacologica presso l'Associazione-Museo di Biologia Marina e Paleontologia di Reggio Calabria (MBMPRC-

http://www.museopaleomarino.org) che fa parte della rete dell'Associazione Nazionale Musei Scientifici (ANMS).

Sistematica

Classe Gastropoda Cuvier, 1797
Famiglia Muricidae Rafinesque, 1815
Sottofamiglia Coralliophilinae Chenu, 1859

Genere ***Babelomurex*** Coen, 1922

Babelomurex tectumsinensis (Deshayes, 1856)
(**Fig. 2**)

Materiale esaminato

Due esemplari viventi ed una conchiglia da Scilla, 52 m.

Distribuzione

La specie è nota per l'Atlantico Orientale: Isole Canarie (Lanzarote), Marocco (Bondyour), Gabon; per il Mediterraneo: Stretto di Gibilterra, Marocco, Isole Egadi (M. Oliverio, com. pers.), Palermo (Monterosato, 1872), Sciacca (Maravigna, 1840; Settepassi, 1971), Messina (Priolo, 1964), Scilla (Vazzana, 2010).
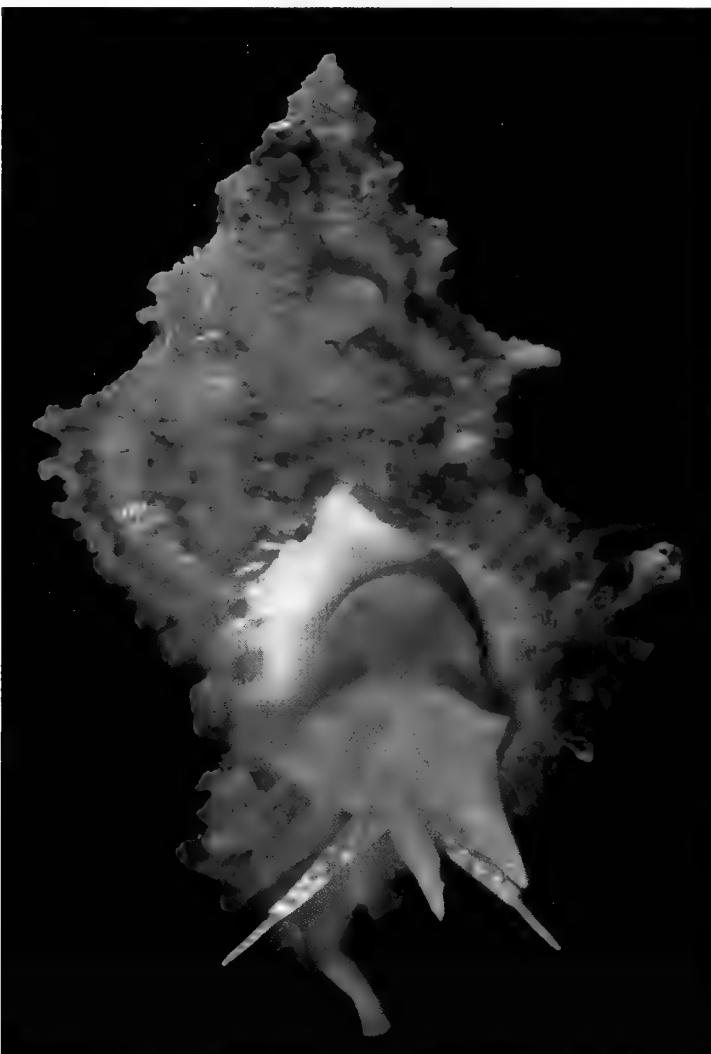
Fig. 2. *Babelomurex tuctumsinensis* (Deshayes, 1856), Scilla, 52 m, h = 40 mm.

Fig. 2. *Babelomurex tuctumsinensis* (Deshayes, 1856), Scilla, 52 m, h = 40 mm.

Osservazioni

Cossignani (2010) ha riassunto la complessa storia nomenclaturale di questa specie, ed ha illustrato il tipo di *Murex tectum-sinense* Deshayes, 1856, ora denominata *Babelomurex tectumsinensis* (Deshayes, 1856).
In uno dei due esemplari raccolti viventi a Scilla (**Fig. 2**), sono state osservate le caratteristiche del mollusco: la livrea, al di sopra del margine della suola del piede, si presenta su un fondo con un gradiente di colore tra il beige scuro ed il marrone chiaro, con macchie addensate di forma ovale e allungate di colore più chiaro. Questo schema cromatico che si estende ai due tentacoli cefalici che si assottigliano in corrispondenza del terzo superiore, in corrispondenza del quale sono posizionati gli occhi. La suola del piede è uniformemente di colore beige. Al margine columellare del piede è aderente un sottile opercolo corneo, di forma ovale con un'estremità anteriore più acuta, di colore beige-scuro e il margine esterno più chiaro. Il sifone è di colore beige e presenta l'apertura ad imbuto.
La spira è di forma conica a balze, a cui si deve denominazione specifica ("a tetto cinese"). La colorazione del guscio, mattone chiaro, è data soprattutto dalle fitte lamelle ben rilevate presenti sui cordoni spirali, i quali nascondono in parte la colorazione di base che è piuttosto chiara. I cordoni lamellari sono ben rilevati ed in numero crescente, fino a 14 nell'ultimo giro. Il cordone presente a metà dei giri di spira è più rilevato, formando una carena con spine lamellari subtriangolari. L'apertura è subromboidale con canale sifonale aperto, ricurvo a sinistra, con forte scultura lamellare. L'interno dell'apertura è di colore bianco.
Su questo stesso esemplare (**Fig. 2**) è stato ritrovato ancora aderente un piccolo brachiopode tipico degli ambienti di grotta semi-oscura, *Argyrotheca cordata* (Risso, 1836), il bivalve arcide *Asperarca magdalenae* La Perna, 1988, anch'esso noto per gli ambienti di grotta, ed il macroforaminifero *Miniacina miniacea* (Linnè, 1758).
Le dimensioni dell'esemplare raffigurato sono: altezza 40 mm, larghezza 28 mm.
Per la forma generale, in passato, questa specie è stata confusa con altre Coralliophilinae, in particolare con *Babelomurex cariniferus* (Requien, 1848), che si distingue da *B. tectumsinensis* per la colorazione chiara, quasi bianca, per la scultura a cordoni spirali sottili e poco rilevati, e per la distribuzione della lamellosità solo nell'ultimo giro.

Genere ***Coralliophila*** H. Adams & A. Adams, 1853

Coralliophila ahuiri Cossignani, 2009
(**Fig. 3A-I**)

Materiale

Due esemplari da Scilla, 52 m.
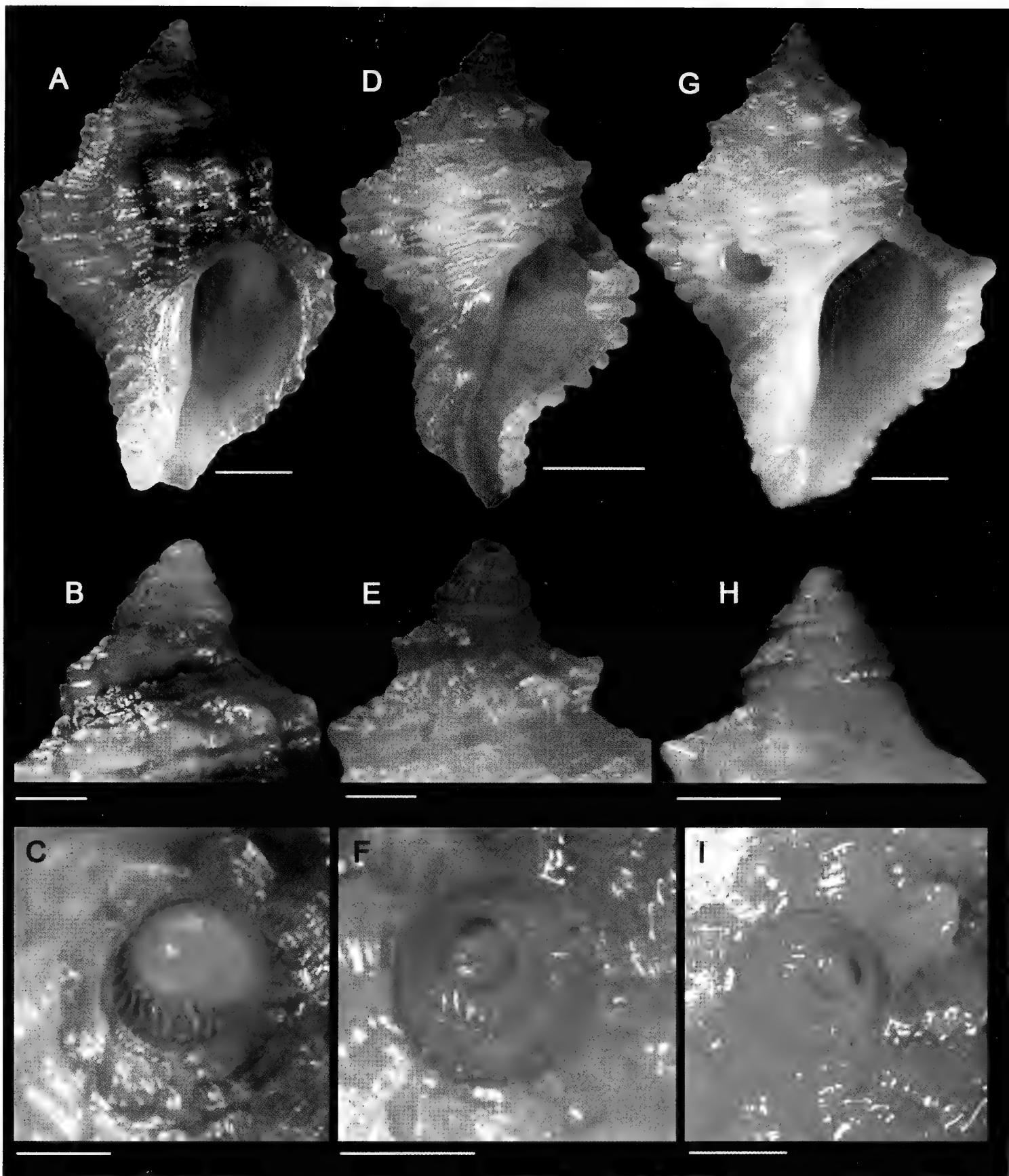
Fig. 3. *Coralliophila ahuiri* Cossignani, 2009. **A-C**. Stretto di Gibilterra (Marocco mediterraneo), 80 m; h = 6,6 mm. **D-F**. Scilla, 52 m, h = 5,3 mm. **G-I**. Scilla, 52 m, h = 7,0 mm. Scala 1 mm.

Fig. 3. *Coralliophila ahuiri* Cossignani, 2009. **A-C**. Gibraltar Strait (Mediterranean Morocco), 80 m; h = 6.6 mm. **D-F**. Scilla, 52 m, h = 5.3 mm. **G-I**. Scilla, 52 m, h = 7.0 mm. Scale bar 1 mm.

Distribuzione

La specie fu descritta per le coste marocchine dello Stretto di Gibilterra, a 120 m di profondità. Questa è la prima segnalazione per le acque italiane.

Osservazioni

Gli esemplari di *Coralliophila ahuiri* (**Fig. 3D-I**) sono stati ritrovati nel detrito organogeno raccolto all'interno della grotta sopra descritta. Per la loro piccola dimensione, gli esemplari erano stati considerati ad una prima osservazione, come forme giovanili di specie di Coriallophilinae già note per questi fondali. La particolarità che ha indirizzato verso la loro identificazione è la caratteristica colorazione rossa dei giri embrionali, che spicca sul colore bianco del guscio. L'identificazione è stata poi

confermata dal confronto con esemplari topotipici (**Fig. 3A-C**).

La protoconca è multispiralata, con protoconca I cupuliforme, liscia, costituita da due giri, e protoconca II costituita da 2,5 giri. La scultura della protoconca II è data da costoline assialmente convesse, distanziate e decorrenti tra le due suture della spira. Nella seconda parte del primo giro, in prossimità della sutura superiore e inferiore, compaiono dei tubercoli che si distanziano progressivamente dalle suture corrispondenti, in maggior misura quelli della serie inferiore tale da formare un solco che si amplia fino a divenire una superficie concava. Le costoline diventano progressivamente meno convesse e quasi diritte, e il profilo da convesso diventa quasi piatto fino a leggermente concavo in corrispondenza della zona della giunzione con la teleoconca. Qui il colore sfuma progressivamente in un fondo rosato che diventa bianco all'inizio della teleoconca. Verso la parte terminale, si formano dei cordoni spirali secondari con tubercoli meno pronunciati rispetto al precedente cordone iniziale, il quale si trasforma in un cordone carenato con dei tubercoli prominenti, presenti anche nella parte iniziale della spira.

La teleoconca è di colore bianco-trasparente con sfumature rosate. La scultura assiale, presente sin dall'inizio della teleoconca, è costituita da "costole rilevate ed arrotondate a cresta d'onda ed uniformi in numero di 9/10 per giro", come descritto da Cossignani (2009).

Non è stato possibile descrivere la morfologia del mollusco, essendo rimasto all'interno del guscio allo stato secco.

Conclusioni

Per i fondali di Scilla erano già note le seguenti specie di Coralliophilinae: *Coralliophila brevis* (Blainville, 1832), *C. meyendorffii* (Calcara, 1845), *C. sofiae* (Aradas & Benoit, 1876), *C. squamosa* (Bivona And., 1838), *Babelomurex benoitii* (Tiberi, 1855) e *B. cariniferus* (Sowerby G.B.I, 1834). Il ritrovamento di queste altre due specie fornisce ulteriori evidenze della diversità e ricchezza della fauna degli ambienti coralligeni con ricchi popolamenti a gorgonari sui fondali di Scilla.

All'interno della grotta sottomarina è abbondantemente presente lo scleractiniario *Cladopsammia rolandi* Lacaze-Duthiers, 1897, che potrebbe essere la specie alla quale *B. tectumsinensis* è associata. Un altro scleractiniario, *Leptosammia pruvoti* Lacaze-Duthiers, 1897 è presente nell'ambiente circostante, prediligendo sia falesie in ombra che grotte sottomarine.

Nella segnalazione originaria nell'area dallo Stretto di Gibilterra, *Coralliophila ahuiri* è stata ritrovata su substrati detritici a *Corallium rubrum*. A Scilla, *Corallium rubrum* si trova a partire da una profondità di circa 80 m ed in un sito non distante da questa cavità. È da considerare che l'idrodinamismo favorisce la dispersione delle forme larvali, e ovviamente anche il trasporto di gusci vuoti. *Paramuricea clavata* (Risso, 1826), che forma densi popolamenti nell'area, potrebbe rappresentare un'altra specie a cui *C. hauiri* è associata (Oliverio & Gofas, 2006). Un altro esemplare di *C. ahuiri* è stato trovato, sempre nella area dello Stretto, in località Lazzàro-Capo dell'Armi sulla costa calabra, 16 km a sud di Reggio Calabria, in una cavità alla base di una falesia sommersa con popolamento a *Corallium rubrum* alla profondità di 70 m.

Ringraziamenti

I miei ringraziamenti vanno a Walter Renda per le segnalazioni bibliografiche, a Josè Ahuir Galindo per aver fornito esemplari topotipici di *Coralliphila hauiri*, e ai referee che hanno fornito commenti e correzioni.

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Prima segnalazione di *Deroceras sturanyi* (Simroth, 1894) per la fauna italiana (Gastropoda: Pulmonata: Agriolimacidae)

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Riassunto

Deroceras sturanyi (Simroth, 1894), una specie originaria dell'Europa sud-orientale, successivamente introdotta in diversi paesi europei, viene segnalata per la prima volta in Italia, in Piemonte, sulle sponde del Lago di Viverone. La determinazione è stata confermata sulla base dei caratteri anatomici. Il ritrovamento di questa specie in un ambiente fortemente antropizzato, unitamente alla presenza di altre entità alloctone censite nella medesima stazione di raccolta o nelle immediate vicinanze, avallerebbero l'ipotesi di un'introduzione passiva operata dall'uomo.

Parole chiave

Agriolimacidae, *Deroceras*, Italia, Piemonte, distribuzione, introduzione antropica.

Abstract

[*First record of* Deroceras sturanyi *(Simroth, 1894) for the Italian fauna (Gastropoda: Pulmonata: Agriolimacidae)*]. *Deroceras sturanyi* (Simroth, 1894), a species native to SE Europe and then introduced in several other European countries, is reported from Italy (Viverone lake, Piedmont) for the first time. The identification was confirmed by the study of anatomical characters. The discovery of this species in disturbed habitat, together with the occurrence of other alien taxa in the same area or nearby localities, suggest the hypothesis of anthropic introduction.

Key words

Agriolimacidae, *Deroceras*, Italy, Piedmont, distribution, anthropic introduction.

Introduzione

La famiglia Agriolimacidae raggruppa limacce di taglia piuttosto piccola, con corpo munito di una breve carena dorsale, quasi sempre limitata all'ultimo tratto del dorso, e con pneumostoma posto nell'area posteriore destra del mantello. Il tratto genitale, invece, è caratterizzato da un pene breve, quasi sempre provvisto esternamente di appendici, variabili nella forma e nel numero, e internamente solitamente munito di un organo stimolatore, anch'esso di forma variabile (Wiktor, 2000; Schileyko, 2003). Questa famiglia include pochi generi: *Furcopenis* Castillejo & Wiktor, 1983, con quattro entità, distribuite nella Penisola Iberica (Castillejo & Mascato, 1987; Outeiro et al., 1993; Wiktor, 2000; Verdú & Galante, 2009); *Krynickillus* Kaleniczenko, 1851, con tre specie note nell'Europa orientale, Caucaso, Turchia e Iran (Wiktor, 1983a; Meng & Bößneck, 1999; Wiktor, 2000; Šteffek et al., 2008; Balashov & Baidashnikov, 2012); *Lytopelte* Boettger, 1886, con una sola specie presente dal Caucaso all'Asia centroccidentale (Wiktor, 2000; Schileyko, 2003); *Megalopelte* Lindholm, 1914, anch'esso con solo una specie della Turchia e aree limitrofe (Wiktor, 2000; Schileyko, 2003); infine, *Deroceras* Rafinesque, 1820, con circa 100 entità distribuite nell'area Paleartica, alcune delle quali successivamente introdotte in altri continenti (Wiktor, 1983b; Barker, 1999; Maassen, 2000; Wiktor, 2000; Hausdorf, 2002; Borredà, 2003; Schileyko, 2003; Mito & Uesugi, 2004; Reise et al., 2006; Wiktor, 2007; Martín et al., 2009; Mc Donnell et al., 2009; Herbert, 2010; Thomas et al., 2010; Reise et al., 2011; Landler & Nuñez, 2012; Welter-Schultes, 2012; Bank, 2013; Gutiérrez Gregoric et al., 2013; Hutchinson et al., 2014). *Deroceras* è l'unico genere rappresentato in Italia, con 14 specie descritte o segnalate sino ad oggi (Manganelli et al., 1995; Welter-Schultes, 2012; Bank, 2013): *D. bisacchianum* Bodon, Boato & Giusti, 1982, endemita limitato alla Liguria occidentale e alle aree confinanti del Piemonte; *D. labani* (Wagner, 1931), *D. sardum* (Simroth, 1886) e *D. dallaii* Giusti, 1970, tre taxa esclusivi della Sardegna; *D. lothari* Giusti, 1973, conosciuto solamente per i Monti Reatini in Lazio; *D. rodnae* Grossu & Lupu, 1965, segnalato in Italia solo in Liguria occidentale; *D. golcheri* Van Regteren Altena, 1962, specie maltese segnalata dubitativamente per l'Isola di Montecristo nell'Arcipelago Toscano; *D. planarioides* (Simroth, 1910), entità endemica nota per l'area alpina orientale dalla Lombardia al Friuli-Venezia Giulia; *D. invadens* Reise, Hutchinson, Schunack & Schlitt, 2011, specie invasiva riconosciuta solo di recente, presente in gran parte delle regioni dell'Italia continentale, nell'Arcipelago Toscano, in Sardegna e in Sicilia, ma segnalata in letteratura con il nome di *D. panormitanum* (Lessona & Pollonera 1882), specie invece presente in Italia, con certezza, solo in Sicilia e in Liguria occidentale; *D. laeve* (Müller, 1774), confermato solo per l'Italia settentrionale e per la Sardegna; *D. klemmi* Grossu, 1972, presente, nel nostro paese, solo nell'area nordorientale; *D. agreste* (Linnaeus, 1758),
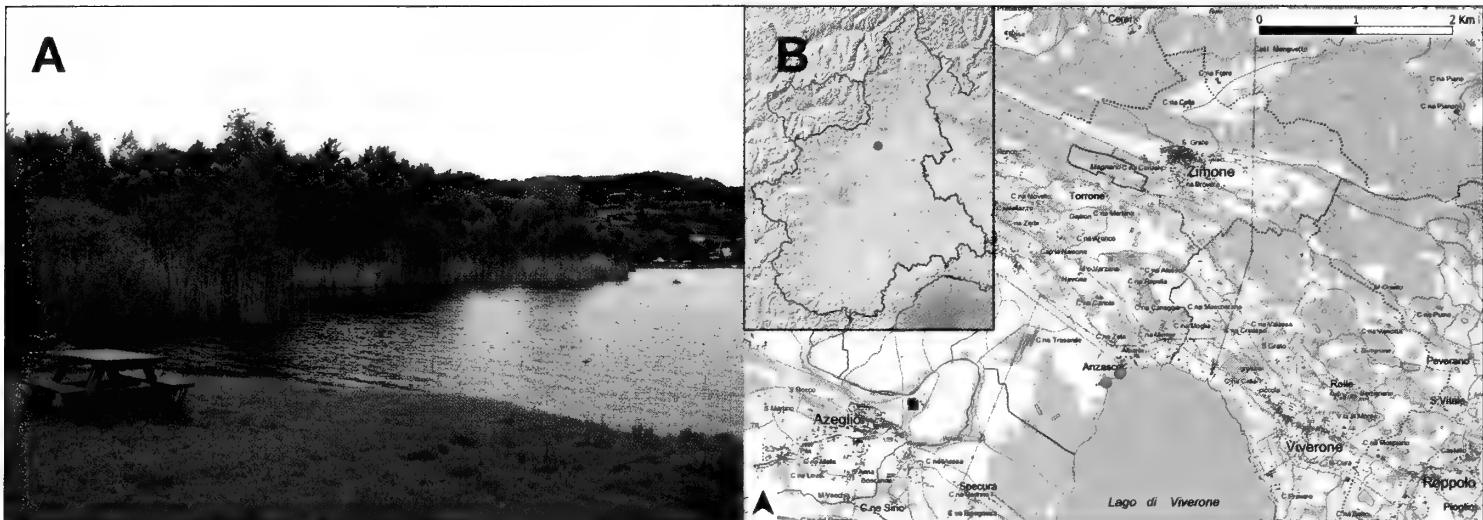
Fig. 1. Stazioni di raccolta di *Deroceras sturanyi* (Simroth, 1894) in Piemonte (Italia nord-occidentale). Ambiente di raccolta (**A**); posizione geografica delle stazioni (**B**). Base cartografica tratta dai seguenti geoservizi WMS: BDTRE - Base cartografica di riferimento a colori (Regione Piemonte) e Base Multiscala Transfrontaliera (ARPA Piemonte).

Fig. 1. Collection sites of *Deroceras sturanyi* (Simroth, 1894) in Piedmont (NW Italy). Collecting environment (**A**); geographical position of the sites (**B**). Cartography from the following geo-services WMS: BDTRE - Base cartografica di riferimento a colori (Regione Piemonte) and Base Multiscala Transfrontaliera (ARPA Piemonte).

segnalato in tutta l'Italia settentrionale, soprattutto nelle aree alpine; *D. reticulatum* (Müller, 1774), la specie più frequente e diffusa, presente in quasi tutta l'Italia continentale e peninsulare e spesso citata nella letteratura scientifica per la fauna nostrana (Wagner, 1931; Forcart, 1965; Giusti, 1968; Zangheri, 1969; Giusti, 1970; Marcuzzi et al., 1970; Alzona, 1971; Giusti & Mazzini, 1971; Schrott & Kofler, 1972; Giusti, 1973a, 1973b; Schrott et al., 1973; Bishop, 1976; Giusti, 1976; Sabelli et al., 1977; Bishop, 1980; Bodon et al., 1982; Giusti & Castagnolo, 1983; Cesari & Orlandini, 1984; Bank, 1985; Boato et al., 1985; Giusti et al., 1985; Giusti, 1986; Maassen, 1987; Cesari, 1988; Boato et al., 1989; Giusti & Manganelli, 1990; Piantelli et al., 1991; Giusti et al., 1995; Manganelli et al., 1995; Wiktor & Milani, 1995; Manganelli et al., 1998; Wiktor, 1998; Dalfreddo et al., 2000; Manganelli et al., 2000; Decet & Fossa, 2001; De Mattia, 2003; Malavasi & Tralongo, 2003; De Mattia, 2004; Dalfreddo, 2005; Ferreri et al., 2005; Petraccioli et al., 2005; Lo Brano & Sparacio, 2006; Minganti & Zocchi, 2006; Dalfreddo, 2007; Cianfanelli & Lori, 2008; Gavetti et al., 2008; Cianfanelli, 2009; Evangelista, 2009; Reitano et al., 2009; Nardi, 2011; Reise et al., 2011; Repetto, 2012; Terzani et al., 2012; Welter-Schultes, 2012; Albano et al., 2013; Bank, 2013; Reitano et al., 2013; Hutchinson et al., 2014; Manganelli et al., 2014; Birindelli, Bodon & Nardi, dati inediti).
Alle entità appena elencate vanno infine aggiunti altri due taxa, non ancora formalmente descritti, ma sicuramente attribuibili a nuove specie: *Deroceras* sp. sensu Bodon et al., 1982, con distribuzione limitata alle Alpi Liguri, in Italia, e al dipartimento delle Alpes-Maritimes, in Francia (Bodon et al., 1982; Manganelli et al., 1995; Falkner et al., 2002) e *Deroceras* sp. sensu Gavetti et al., 2008, entità individuata solo nelle aree alpine settentrionali e occidentali del Piemonte (Gavetti et al., 2008).
Recenti ricerche, compiute in un'area settentrionale del Piemonte, presso il confine tra le province di Torino e Biella, hanno permesso di censire la prima popolazione italiana di *Deroceras sturanyi* (Simroth, 1894), entità mai segnalata sino ad oggi nel nostro paese.

Materiali e metodi

Gli esemplari oggetto della presente nota sono stati raccolti manualmente, sotto le pietre o nascosti tra le cortecce di legni marcescenti.
Dopo rilassamento in acqua, gli esemplari sono stati fissati e conservati in alcool etilico 80°. La dissezione anatomica, per l'analisi dei genitali e del retto, è stata compiuta allo stereomicroscopio per mezzo di sottili pinzette da orologiaio; il tratto genitale è stato successivamente disegnato alla camera lucida, montata sullo stereomicroscopio. Gli esemplari viventi sono stati fotografati con una fotocamera digitale. Il materiale raccolto è conservato nelle collezioni degli autori.

Stazioni e habitat di raccolta

Sponda del Lago di Viverone a SO di Anzasco, 230 m s.l.m., 32T MR2331, comune di Piverone (Torino): S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013 (2 esemplari); S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014 (3 esemplari);
Sponda del Lago di Viverone a E di Anzasco, 230 m s.l.m., 32T MR2431, comune di Piverone (Torino): S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014 (3 esemplari).
In entrambe le stazioni la specie è stata raccolta vicino all'acqua (**Fig. 1**); l'ambiente è sensibilmente degradato, eutrofizzato e fortemente antropizzato. La vegetazione acquatica lacustre include specie alloctone, come *Nelumbo nucifera* Gaertner, 1788, che si estende notevolmente sullo specchio d'acqua, e *Nymphaea mexicana* Zuccarini, 1832; tra la vegetazione riparia sono state segnalate altre specie aliene come *Bidens frondosa* Linnaeus, 1753, *Phytolacca americana* Linnaeus, 1753, *Solidago gigantea* Aiton, 1789, *Sicyos angulatus* Linnaeus, 1753, mentre, tra i crostacei alloctoni, *Procambarus clarkii* (Girard, 1852) ha assunto carattere invasivo (A.A. V.V., 2012, 2014).

Risultati

Descrizione del corpo (**Fig. 2**): limaccia di taglia piccola (esemplari conservati in alcool lunghi 24-39 mm e larghi 0,6-0,9 mm), di colore uniforme senza presenza di macchie, da bruno chiaro a bruno vinaccia (**Fig. 2 A**). Mantello voluminoso che ricopre quasi la metà della lunghezza complessiva del corpo; apertura polmonare posizionata nella metà posteriore del clipeo. Superficie posteriore del corpo ricoperta da mammellonature piuttosto grandi. Suola biancastra, a volte con la zona longitudinale centrale più scura (**Fig. 2 B**). Muco incolore.

Descrizione del tratto genitale (**Fig. 3**): pene caratterizzato da una tipica forma a "martello" (**Fig. 3 A**); la parte distale è, infatti, piuttosto cilindrica, mentre quella prossimale è suddivisa in due lobi voluminosi, opposti tra loro. In questa specie, un lobo è solitamente più breve e arrotondato, l'altro un po' più lungo, di forma variabile, a volte un po' appuntito, a volte biforcato, a volte squadrato, a volte arrotondato e speculare all'altro; negli esemplari piemontesi studiati i due lobi sono apparsi simili tra loro, entrambi arrotondati. Appendici peniali assenti. Muscolo retrattore largo che si inserisce nella parte prossimale del pene, al centro tra i due lobi; il vaso deferente entra nel pene prossimale vicino al punto di inserzione del muscolo retrattore, un po' spostato presso la base di uno dei due lobi (**Fig. 3 B**). All'interno del pene distale è presente uno stimolatore conico, un poco elevato (**Fig. 3 C-E**), mentre il tratto prossimale presenta, internamente, una plica evidente. Tutta la superficie interna, compresa quella dello stimolatore, è striata.

Altri caratteri diagnostici (**Fig. 3 F**): cieco rettale appena accennato, a forma di tasca o assente (retto solo un poco dilatato negli esemplari piemontesi). Gli organi interni sono ricoperti da un caratteristico mesentere nerastro.

Discussione e conclusioni

A causa del colore bruno uniforme, *Deroceras sturanyi* può essere confuso con altre specie congeneriche, presenti in Italia, come per esempio *D. laeve*, *D. invadens* e *D. panormitanum* (Kerney et al., 1983; Falkner, 1990; Turner et al., 1998; Kerney & Cameron, 1999; Horsák et al., 2010; Reise et al., 2011; Welter-Schultes, 2012; Hutchinson et al., 2014; Soes, 2014). Tuttavia l'analisi del tratto genitale, così caratteristico e inconfondibile, garantisce una sicura attribuzione specifica. Nessuna delle entità note, appartenenti al genere *Deroceras*, possiede infatti un pene dalla forma a "martello" (**Fig. 3 A**), dovuta ai due lobi presenti nella zona prossimale, almeno uno dei quali sempre arrotondato, ad eccezione di *D. riedelianum* Wiktor, 1983, dell'Algeria, il cui pene è però più allungato (Lupu, 1972; Wiktor, 1973; Damjanov & Likharev, 1975; Likharev & Wiktor, 1980; Kerney et al., 1983; Wiktor, 1983a; Wiktor, 2000; Horsák et al., 2010; Soes, 2014). Altra caratteristica diagnostica è rappresentata dalla completa assenza di appendici flagelliformi peniali, quasi sempre presenti nelle specie appartenenti al genere *Deroceras* (Wiktor, 2000). In ogni caso, le altre specie presenti in Italia ed esternamente più simili a *D. sturanyi* presentano sempre delle evidenti appendici flagelliformi peniali: in *D. laeve* l'appendice è unica e spesso voluminosa, sovente crenulata all'apice, mentre in *D. invadens* e in *D. panormitanum* le appendici sono numerose, più piccole, digitiformi e crenulate (Wiktor, 2000; Reise et al., 2011).

Deroceras sturanyi, entità segnalata storicamente anche con i nomi di *Agriolimax murinus* Simroth, 1894 e *Deroceras romanicus* Grossu & Lupu 1959, è probabilmente una specie originaria dell'Europa sud-orientale (dalla Macedonia alla Croazia e all'Ungheria), successivamente introdotta in Turchia, Kazakistan e in numerosi stati dell'Europa centrale e orientale (Wiktor, 2000; Welter-Schultes, 2012). Allo stato attuale questa specie è nota con certezza per i seguenti paesi europei: Albania, Austria, Belgio, Bosnia-Erzegovina, Bulgaria, Croazia, Danimarca, Francia, Germania, Grecia e isole dell'Egeo settentrionale, Lituania, Macedonia, Montenegro, Olanda, Polonia, Repubblica Ceca, Romania, Russia, Serbia, Slovacchia, Slovenia, Svezia, Svizzera, Ucraina, Ungheria (Simroth, 1894; Grossu & Lupu, 1959; Hudec, 1970; Likharev & Wiktor, 1980; Schnell & Schnell, 1981; Grossu, 1983; Kerney et al., 1983; Wiktor, 1983a; Gittenberger
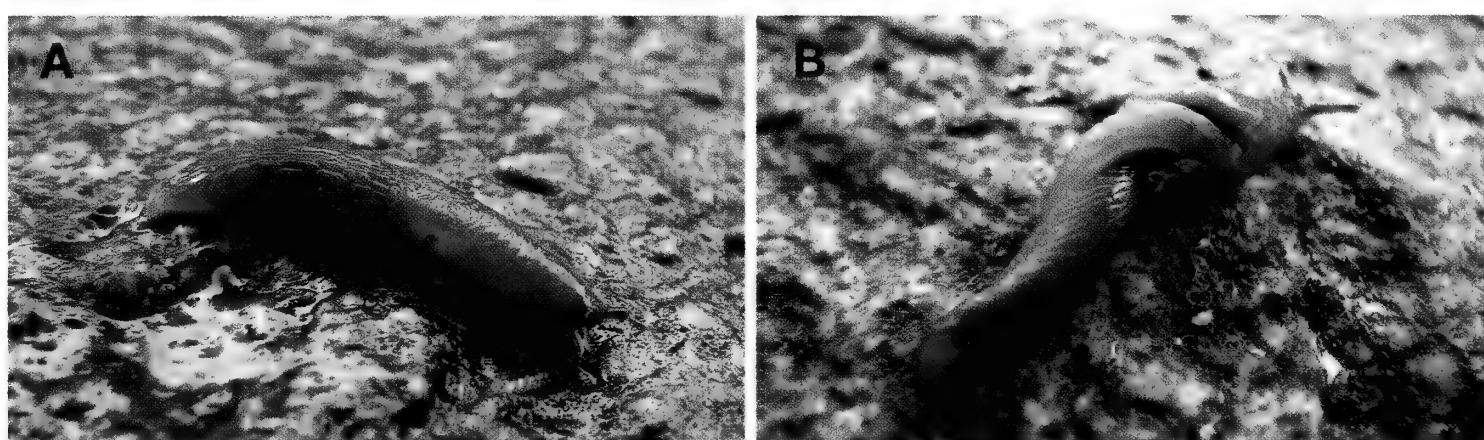
Fig. 2. Esemplari di *Deroceras sturanyi* (Simroth, 1894) fotografati sulla sponda del Lago di Viverone a SO di Anzasco, comune di Piverone (Torino), S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. Visione dorsale (**A**); aspetto della suola (**B**).

Fig. 2. Specimens of *Deroceras sturanyi* (Simroth, 1894) photographed on the bank of Lago di Viverone, SW of Anzasco, municipality of Piverone (Torino), S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. Dorsal view (**A**); view of the sole (**B**).
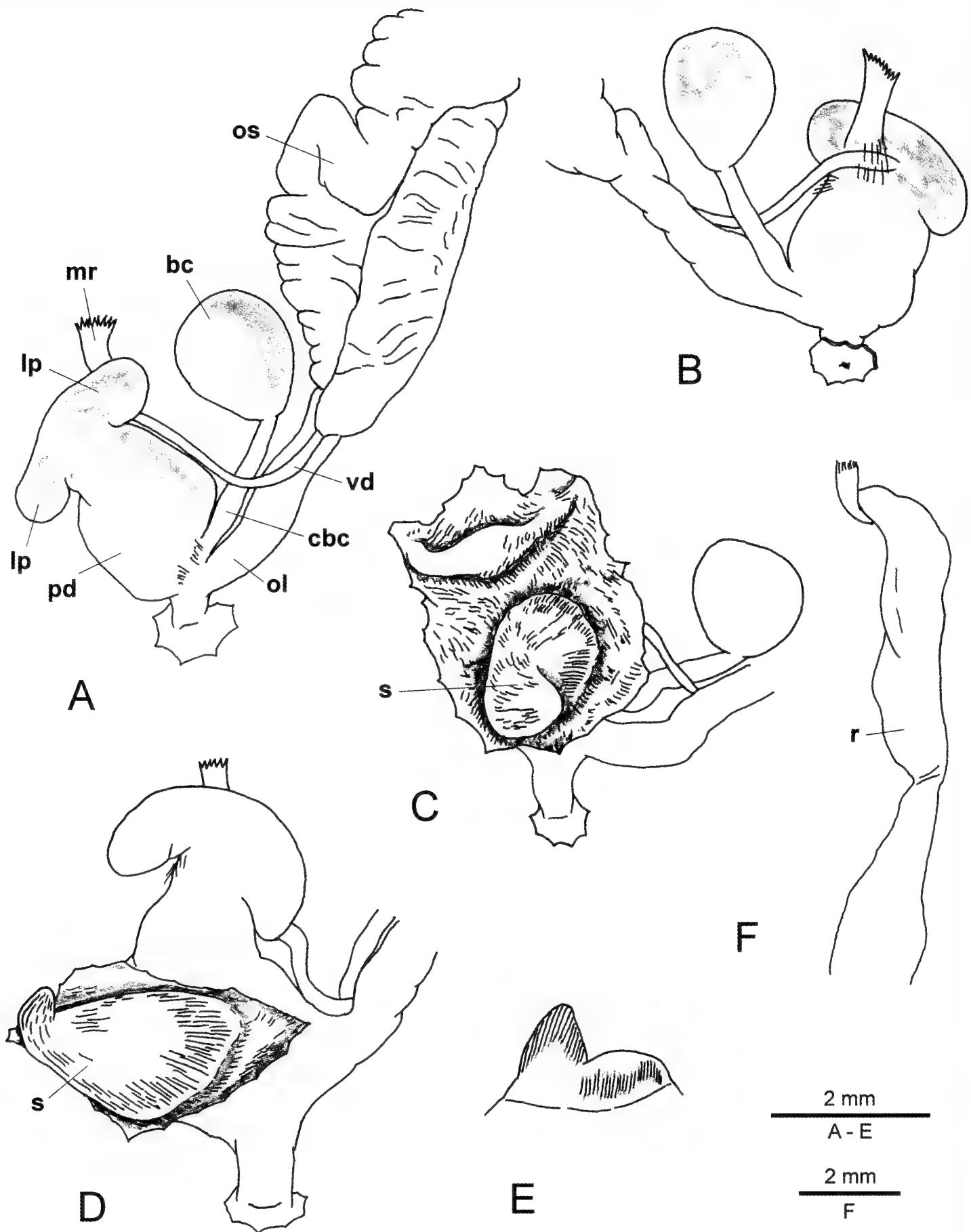
Fig. 3. Apparato genitale distale di due esemplari e intestino di un esemplare di *Deroceras sturanyi* (Simroth, 1894) raccolti sulla sponda del Lago di Viverone a SO di Anzasco, comune di Piverone (Torino), S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013. Apparato genitale distale (**A**-**D**), stimolatore (**E**), ultimo tratto dell'intestino (**F**). Acronimi: bc = borsa copulatrice; cbc = canale della borsa copulatrice; lp = lobo peniale; mr = muscolo retrattore; ol = ovidutto libero; os = ovospermidutto; pd = parte distale del pene; r = retto; s = stimolatore; vd = vaso deferente.

Fig. 3. Distal genitalia of two specimens and intestine of a specimen of *Deroceras sturanyi* (Simroth, 1894) collected on the bank of the Lago di Viverone, SW of Anzasco, municipality of Piverone (Torino), S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013. Distal genital tract (**A**-**D**), stimulator (**E**), distal tract of the intestine (**F**). Anatomical acronyms: bc = bursa copulatrix; cbc = duct of the bursa copulatrix; lp = penial lobe; mr = penial retractor muscle; ol = free oviduct; os = ovispermiduct; pd = distal penis; r = rectum; s = stimulator; vd = vas deferens.

et al., 1984; Van Goethem & De Wilde, 1985; Falkner, 1990; Wiktor, 1996; Turner et al. 1998; Kerney & Cameron, 1999; Pelbárt, 2000; Wiktor, 2000; Lill, 2001; Wiktor, 2001; Falkner et al., 2002; Skujiene, 2002; Vaupotič & Velkovrh, 2003; Soes & de Winter, 2004; Hausser, 2005; Irikov & Mollov, 2006; Karaman, 2006; Hubenov, 2007; Dhora, 2009; Fehér & Erőss, 2009; Kantor et al., 2009; Schütt, 2010; Aescht & Bisenberger, 2011; Boschi, 2011; Gargominy et al., 2011; Welter-Schultes et al., 2011; Balashov & Gural-Sverlova, 2012; Welter-Schultes, 2012; Bank, 2013; Horsák et al., 2013; Horáčková et al., 2014; Soes, 2014; Wiese, 2014).

Il ritrovamento di *D. sturanyi* conferma dunque l'ennesima introduzione di questa specie, particolarmente predisposta al trasporto passivo e ben adattabile ai luoghi antropizzati, in un altro paese europeo, l'Italia, dove si aggiunge alla lista dei molluschi terrestri alieni ritrovati fino ad oggi (Bodon et al., 2004; Lori et al., 2005; Hallgass & Vannozzi, 2010). Ad avvalorare l'ipotesi di una recente introduzione passiva, operata dall'uomo, vi sarebbe la presenza di altri gasteropodi terrestri alloctoni o transfaunati da altre regioni italiane, censiti nelle medesime stazioni di raccolta, o nelle sue vicinanze (**Tab. 1**), quali *Carychium hellenicum* Bank & Gittenberger, 1985, *Arion vulgaris* (Moquin-Tandon, 1855), *Hawaiia minuscula* (Binney, 1841), *Zonitoides arboreus* (Say, 1817) e *Lehmannia valentiana* (Férussac, 1822), quasi tutti segnalati o trovati solo di recente e ancora molto localizzati in Piemonte (Magnaghi et al., 1978; Boato et al., 1985; Bodon et al., 2004; Gavetti et al., 2008; Evangelista et al., 2013; Birindelli, Bodon & Nardi, dati inediti).

Famiglia	Specie	Specie transfaunata o alloctona	Stazione A	Stazione B	Stazione C
Carychiidae	*Carychium hellenicum* Bank & Gittenberger, 1985	*			X
Carychiidae	*Carychium tridentatum* (Risso, 1826)				X
Succineidae	*Oxyloma elegans elegans* (Risso, 1826)		X	X	
Vertiginidae	*Vertigo antivertigo* (Draparnaud, 1801)				X
Vertiginidae	*Vertigo pygmaea* (Draparnaud, 1801)			X	
Argnidae	*Argna ferrari ferrari* (Porro, 1838)				X
Valloniidae	*Vallonia costata* (Müller, 1774)		X		
Valloniidae	*Vallonia pulchella* (Müller, 1774)			X	
Discidae	*Discus rotundatus rotundatus* (Müller, 1774)			X	X
Arionidae	*Arion vulgaris* Moquin-Tandon, 1855	**	X	X	X
Pristilomatidae	*Hawaiia minuscula* (Binney, 1841)	**			X
Oxychilidae	*Perpolita hammonis* (Strøm, 1765)		X		
Oxychilidae	*Oxychilus draparnaudi* (Beck, 1837)			X	X
Gastrodontidae	*Zonitoides arboreus* (Say, 1816)	**	X		
Gastrodontidae	*Zonitoides nitidus* (Müller, 1774)		X		
Limacidae	*Limax maximus* Linnaeus, 1758			X	
Limacidae	*Lehmannia valentiana* (Férussac, 1822)	**		X	
Agriolimacidae	*Deroceras reticulatum* (Müller, 1774)		X	X	
Agriolimacidae	*Deroceras sturanyi* (Simroth, 1894)	**	X	X	
Clausiliidae	*Macrogastra attenuata lineolata* (Held, 1836)			X	X
Hygromiidae	*Hygromia cinctella* (Draparnaud, 1801)		X	X	X
Helicodontidae	*Helicodonta obvoluta* (Müller, 1774)				X
Helicidae	*Cornu aspersum aspersum* (Müller, 1774)			X	

Tab. 1. Malacofauna terrestre associata a *Deroceras sturanyi* (Simroth, 1894) nelle stazioni dove sono state censite le prime popolazioni italiane o nelle vicinanze di queste. **A**) Sponda del Lago di Viverone a SO di Anzasco, Piverone (TO), 230 m s.l.m., 32T MR2331, S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013; S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. **B**) Sponda del Lago di Viverone a est di Anzasco, Piverone (TO), 230 m s.l.m., 32T MR2431, S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013; S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. **C**) Detriti sulla sponda del Lago di Viverone, riva est in loc. Comuna, Viverone (BI), 230 m s.l.m., 32T MR2628, M. Bodon, E. Bodon & G. Vezzani leg. 09/02/2014. *: specie alloctone per il Piemonte, transfaunate da altre regioni italiane; **: specie alloctone per l'Italia.

Tab. 1. List of the terrestrial molluscs in the sites where or nearby the first population of *Deroceras sturanyi* (Simroth, 1894) has been collected. **A**) bank of the Lago di Viverone, SW of Anzasco, Piverone (TO), 230 m a.s.l., 32T MR2331, S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013; S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. **B**) bank of the Lago di Viverone, E of Anzasco, Piverone (TO), 230 m a.s.l., 32T MR2431, S. Birindelli, M. Bodon & G. Nardi leg. 24/11/2013; S. Birindelli, G. Nardi, E. Gavetti & C. Pulcher leg. 02/05/2014. **C**) Debris on the bank of Lago di Viverone, east bank in locality Comuna, Viverone (BI), 230 m a.s.l., 32T MR2628, M. Bodon, E. Bodon & G. Vezzani leg. 09/02/2014. *: alien species in Piedmont, introduced from other Italian regions; **: alien species in Italy.

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The original descriptions of the Mediterranean taxa in the order Sepiolida (Mollusca: Cephalopoda) with notes on the validity of the specific name *Sepiola rondeletii* Leach, 1817

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Abstract
The original descriptions of all the Mediterranean taxa in the order Sepiolida are reported and discussed. The correct scientific name, authorship and publication date for these taxa are also established. The 27 taxa included in the present work are: family Sepiolidae; subfamily Sepiolinae, genus *Sepiola* and its species *rondeletii, aurantiaca, steenstrupiana, intermedia, robusta, ligulata, affinis, bursadhaesa*; genus *Sepietta* and its species *oweniana, obscura, neglecta*; genus *Rondeletiola* and its species *minor*; subfamily Heteroteuthinae, genus *Heteroteuthis* and its species *dispar*; genus *Stoloteuthis* and its species *leucoptera*; subfamily Rossiinae, genus *Rossia* and its species *macrosoma*, genus *Neorossia* and its species *caroli*. Moreover *Sepiola rondeletii* Leach, 1817 was declared *nomen protectum*, whereas *Sepia sepiola* Linnaeus, 1758 was declared *nomen oblitum*.

Key words
Cephalopoda, Sepiolida, Mediterranean Sea, nomenclature, *Sepiola rondeletii*.

Riassunto
[*Le descrizioni originali dei taxa mediterranei dell'ordine Sepiolida (Mollusca: Cephalopoda) con note sulla validità del nome specifico* Sepiola rondeletii *Leach, 1817*]. In questo lavoro sono riportate e discusse le descrizioni originali di tutti i 27 taxa mediterranei dell'ordine Sepiolida. Di questi taxa sono stati anche definiti i nomi scientifici corretti, con le relative paternità e date di pubblicazione. I taxa sono: famiglia Sepiolidae; sottofamiglia Sepiolinae, genere *Sepiola* con le specie *rondeletii, aurantiaca, steenstrupiana, intermedia, robusta, ligulata, affinis, bursadhaesa*; genere *Sepietta* con le specie *oweniana, obscura, neglecta*, genere *Rondeletiola* con la specie *minor*; sottofamiglia Heteroteuthinae, genere *Heteroteuthis* con la specie *dispar*; genere *Stoloteuthis* con la specie *leucoptera*; sottofamiglia Rossiinae, genere *Rossia* con la specie *macrosoma*; genere *Neorossia* con la specie *caroli*. Inoltre, il binome *Sepiola rondeletii* Leach, 1817 viene dichiarato *nomen protectum*, mentre *Sepia sepiola* Linnaeus, 1758 viene dichiarato *nomen oblitum*.

Parole chiave
Cephalopoda, Sepiolida, Mediterraneo, nomenclatura, *Sepiola rondeletii*.

Introduction

The present paper follows in time an earlier one on the Mediterranean taxa in the cephalopod order Sepiida (Bello, 1996) and is in line with it as for its genesis and purpose. In addition to portraying the history of the Mediterranean sepiolid nomenclature, this paper aims at establishing, by means of the original documents and in agreement with the International Code of Zoological Nomenclature, the correct scientific names with proper authorship and publication date to be used in taxonomic works.

In the Mediterranean Sea, the order Sepiolida is only represented by the family Sepiolidae, which is subdivided into the subfamilies Sepiolinae, Heteroteuthinae and Rossiinae, all of them occurring in this sea, with seven genera and 16 species (Bello, 2003, 2008, 2013). In all, 27 taxa are here treated and discussed.

The contents of the present paper adhere to the latest edition of the International Code of Zoological Nomenclature by the International Commission on Zoological Nomenclature (1999), henceforth abbreviated ICZN. An online edition of the Code was also issued, which includes subsequent modifications, at the address http://iczn.org/iczn/index.jsp.

As in Bello (1996), only the taxonomic levels taken into consideration by the ICZN (1999) are dealt with in the present paper, namely family, genus and species levels.

Material and methods

The results of this work are based on the examination of the actual documents, papers in periodicals and books, reporting the original descriptions of the Mediterranean taxa in the order Sepiolida. Several other documents useful to fully understand the nomenclatural cases of some taxa were also inspected. The document search was carried out in the library of several scientific institutions, mainly the Stazione Zoologica in Naples (Italy) and the Woods Hole Oceanographic Institution in Woods Hole (Massachusetts, USA).

Each taxon entry includes the valid name complete of its author and publication date; full reference to the work containing the original description; the original spelling (and combination, for specific names); description in the original language and its English translation, as literally as possible, in braces { }; derivation of name (for generic and specific names); type locality of species; type repository of species; name-bearing type; list of genera and species originally included in the family and genus, respectively; notes, comments, and additional information, under the heading Remarks.
The term 'description' *sensu lato* embraces also the 'definition' and the 'diagnosis' (cf. the Glossary in the ICZN, 1999). In the few cases where the new taxonomic name was only accompanied by an 'indication' (ICZN, 1999: Art. 12.2), this was illustrated.
The use of the original typographical characters was retained, as far as possible, in reporting quotations. Only in a few cases I pointed out, by a [*sic!*] in square brackets, printing mistakes or other types of inaccuracies concerning the linguistic domain. My interpolations are reported in square brackets [ ]. Within each family and genus, genera and species are respectively listed in chronological order.
Citations of Naef (1923) refer to its English translation.

Original descriptions

Family **Sepiolidae** Leach, 1817

Work: W.E. LEACH, 1817. *Synopsis of the Orders, Families, and Genera of the Class* Cephalopoda. *The Zoological Miscellany*, 3(30): 137-141.

Original spelling: Sepiolidea (p. 137).

Definition (in "Ordo II. DECAPODA"; family I; p. 137):
"Corpus ovale bursiforme. Pinnæ apice saltem liberæ. Collum supra alto-frenatum aut cum sacco coalitum. Os stiliforme."
{Body oval purse-shaped. Fins free at least at the apex. Neck dorsally deeply-restrained or fused with the sac. Bone [i.e. gladius] pen-shaped.}.

Type genus: *Sepiola* (*Sepiol-a* → Sepiol-idea, as the original spelling → Sepiol-idae, corrected).

Other genera originally included in the family: *Cranchia* Leach, 1817.

Remarks: Sepiolidea is one of the two families into which Leach (1817) subdivided the order Decapoda. This family included two very different genera, *Sepiola* and *Cranchia*, which indeed are so distant systematically to be placed now into distinct orders, namely Sepiolida and Teuthida. Leach's misjudgement in grouping so different genera into the same family was most probably induced by the fusion, in both genera, of the mantle with head in the occipital area, which is just a case of homoplasy. The family Sepiolidae, as agreed today, includes also taxa that do not display the character 'mantle dorsally fused with head', i.e. the Rossiinae and some heteroteuthines. Several authors, including Naef (1923), mistakenly ascribed the Sepiolidae authorship to Keferstein, 1866.

Subfamily **Sepiolinae** Leach, 1817 *nom. transl. ex* Appellöf, 1898

This subfamily was first proposed by Appellöf (1898). Nonetheless, according to the Principle of Coordination of the ICZN (1999: Art. 36.1), all ranks in the family group must have the same type genus, authorship and date according to the first name established at any rank. Hence the name stem, work and type genus for the subfamily Sepiolinae are the same as those of the family Sepiolidae.

Work: W.E. LEACH, 1817. *Synopsis of the Orders, Families, and Genera of the Class* Cephalopoda. *The Zoological Miscellany*, 3(30): 137-141.

Original spelling: Sepiolidea (p. 137).

Diagnosis by Appellöf (1898) (in "Fam. **Sepioladae**"; p. 623):
"A. Mantel mit dem Nacken verwachsen.
b. Rückenarme hektokotylisiert.
α. Dorsaler Mantelrand mit dem Kopf verwachsen. Kein knorpeliger Nackenschließapparatus. Unterfam. Sepiolini."
{A. Mantle fused with neck. // b. Posterior arms hectocotylized. // α. Dorsal mantle edge fused with head. No cartilaginous mantle-locking apparatus. Subfam. Sepiolini.}.

Type genus: *Sepiola* (*Sepiol-a* → Sepiol-ini, as the original spelling → Sepiol-inae, corrected).

Other genera originally included in the subfamily: *Inioteuthis* Verrill, 1881; *Stoloteuthis* Verrill, 1881.

Remarks: Appellöf (1898) reviewed the whole systematics of the family Sepioladae [corrected: Sepiolidae] and provided a thorough identification key to the genus level. He subdivided this family into the subfamilies Sepiadarii [corrected: Sepiadariinae], Sepiolini [corrected: Sepiolinae], Heteroteuthinae, and Rossiae [corrected: Rossiinae]. He grouped the first three of them within the character "A. Mantle fused with neck" while, under the character "B. Mantle and neck not fused with each other", he placed only the Rossiinae. According to present day systematics (Jereb & Roper, 2005), Appellöf's taxon Sepiadarii is considered a family by itself, namely Sepiadariidae;

moreover *Stoloteuthis* is included in the subfamily Heteroteuthinae. These amendments apart, Appellöf's classification of the Sepiolidae has proven rather robust and is still the one presently accepted (cf. Jereb & Roper, 2005). It is quite peculiar that Appellöf adopted four different suffixes to denote four names of the same taxonomic level, i.e. subfamily, which implies the lack of universal nomenclatural rules at that time.
Appellöf (1898) did not indicate explicitly by any abbreviations, such as sfam. nov., his intention to erect new subfamilies, which is not mandatory for a new name to be available when published before 1999 (ICZN, 199: Art. 16.1).
The correct title of Appellöf's (1898) work is *Cephalopoden von Ternate*. It consists of two parts. The description of the new subfamilies is contained in the second part titled *Untersuchungen über* Idiosepius, Sepiadarium *und verwandte Formen, ein Beitrag zur Beleuchtung der Hektokoylisation und ihrer systematischen Bedeutung*.

Genus *Sepiola* Leach, 1817

Work: W.E. Leach, 1817. *Synopsis of the Orders, Families, and Genera of the Class* Cephalopoda. *Zoological Miscellany*, 3(30): 137-141.

Original spelling: *Sepiola* (p. 137).

Definition (in "Fam. I. Sepiolidea"; p. 137):
"Pinnæ laterali-dorsales distantes. Pedes ordinarii æqualis. Collum postice cum sacco coalitum. Latera freno parva instructa."
{Latero-dorsal fins spread apart. Regular feet [i.e. arms] equal. Neck posteriorly fused with sac [i.e. mantle]. [Parts at] sides of fusion slightly drawn out.}.

Derivation of name: Not stated. From *Sepia*, the cuttlefish genus, and the diminutive suffix *-ola* = "little *Sepia*"; after Rondeletius (1554).

Gender: feminine.

Type species: *Sepiola rondeletii* Leach, 1817, by monotypy.

Other species originally included in the genus: none.

Remarks: The definition of *Sepiola* by Leach (1817) is not complemented by any statement denoting its condition of new genus. Moreover, in the section "Synonym Generum, &c.", Leach (1817: 140) ascribed *Sepiola* to Rondeletius [1554], thus "Sepiola. *Rondeletii*", but the old French scientist cannot be considered this genus author because his work was published before 1758 (ICZN, 1999: Art. 3.2). Incidentally, Rondeletii is the spelling of the Latinized Author's name in the genitive case, as it appears in the title page of Rondelet's work.
The definition of *Sepiola* is quite concise by modern standards and does not discriminate sufficiently among the genera in the Sepiolinae. Nevertheless, the reference to the old French scientist implies his figure of *Sepiola* (Rondeletius, 1554: 519) with the typical set of bean-like light organs (**Fig. 1**), which is unambiguously indicative of present day genus *Sepiola* (*cf.* Naef, 1923: caption to fig. 343). Specifically, Rondelet's figure depicts a male, as evidenced by the curved hectocotylus.
The Linnaean name *Sepiola* is a specific epithet within the genus *Sepia* and is not to be confused with the homonymous genus herein discussed.
Sepiola Leach, 1817 is the type genus of the family Sepiolidae Leach, 1817.

Species *Sepiola rondeletii* Leach, 1817

Work: W.E. Leach, 1817. *Synopsis of the Orders, Families, and Genera of the Class* Cephalopoda. *Zoological Miscellany*, 3(30): 137-141.

Original spelling and combination: *Sepiola Rondeletii* (p. 140).

Indication (in "Gen. IV. Sepiola"; p. 140): No description is given. The synonym "Sepia Sepiola. *Linné*" [1758] is indicated.

Derivation of name: Not stated. From *Rondeletius* (genitive case: *Rondeletii*), Latin form of Guillaume Rondelet's (1507-1566) family name, the author that first described and figured the species (Rondeletius, 1554: 519-520).

Type locality: "Habitat in mari Europæo." {Lives in the European sea.} (p. 140).

Type repository: Not specified.

Remarks: Leach (1817) gave no definition for this species. Nevertheless his quotation of the Linnaean synonym *Sepia sepiola* is deemed an indication (ICZN,
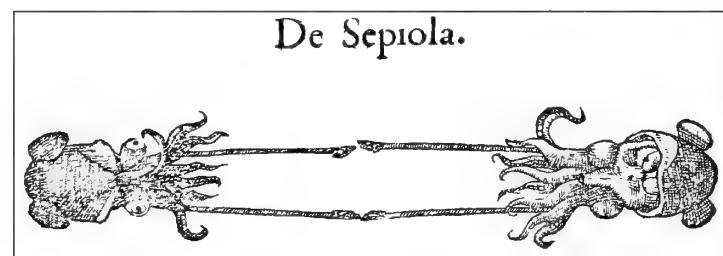
Fig. 1. Guillaume Rondelet's original figure of *Sepiola*. The specimen ventral view (right) displays the typical set of bean-like light organs (after Rondeletius, 1554: p. 519).

Fig. 1. *Sepiola*, figura originale di Guillaume Rondelet. In evidenza nella visione ventrale dell'esemplare (a destra) la tipica coppia di organi luminosi a forma di fagiolo (da Rondeletius, 1554: p. 519).

1999: Art. 12.2.1), which makes Leach's binomen available.
Indeed, *Sepiola rondeletii* Leach, 1817 is a junior synonym of *Sepia sepiola* Linnaeus, 1758, which, incidentally, is also an available name (cf. negative evidence in the *Official Index of Names in Zoology* [Anonymous, 2012]). Gofas (2013) mentions early attempts, from the late XIX century, to restore the Linnaean name and states "It does not seem that *Sepia sepiola* has ever been used as valid since then, therefore the conditions would be met to apply ICZN art. 23.9 and declare *Sepia sepiola* 'nomen oblitum' and *Sepiola rondeletii* 'nomen protectum', but this has not been done." As a matter of fact, to my knowledge, the senior synonym *Sepia sepiola* Linnaeus, 1758 has not been used as a valid name after 1899 and the junior synonym *Sepiola rondeletii* Leach, 1817 has been used as a valid name for the same taxon in more than 25 works published by more than 10 authors in the last 50 years (see list in Appendix 1) (cf. ICZN, 1999: Art. 23.9.1). Therefore, in order to maintain the prevailing usage of Leach's binomen and in accordance with Art. 23.9.2 it is herein declared that *Sepiola rondeletii* Leach, 1817 is the valid name for this sepioline species. Hence *Sepia sepiola* Linnaeus, 1758 is to be qualified as a *nomen oblitum* and *Sepiola rondeletii* Leach, 1817 as a *nomen protectum* (ICZN, 1999: Art. 23.9.2).
The correct specific name is *rondeletii* (i.e. with two final *-ii*) in compliance with the original spelling; hence the spelling *rondeleti*, with one final *-i*, "is deemed to be an incorrect subsequent spelling" (ICZN, 1999: Art. 33.4), despite its wide usage. Moreover the right publication year is 1817 rather than 1834, as reported in several works (e.g. Sweeney, 2001; Reid & Jereb, 2005).
As for the original *locus typicus*, i.e. the "European sea", it is clear from Leach's (1817) internal evidences that it does not correspond to the Mediterranean. In fact Leach (1817) made a distinction between the two geographical entities; the "European sea" is a wider geographical entity encompassing the Mediterranean Sea. Incidentally, Linnaeus (1758: 659) stated that his *Sepia sepiola* "*Habitat in M.* Mediterraneo" {Lives in the Mediterranean Sea}. Anyway the mention of Linnaeus' species as a synonym of *Sepiola rondeletii* in Leach (1817) does not constitute an indication for the latter species *locus typicus*. *Sepiola rondeletii* has been reported from the whole Mediterranean and the Atlantic Ocean, from Senegal to the North Sea (Reid & Jereb, 2005), but seemingly the northern Atlantic records are inaccurate (Groenenberg et al., 2009). Indeed, all or almost all European sepioline species were ascribed to the nominal species *S. rondeletii* before the revision by Naef (1912b), the first author to accurately define this taxon. Unfortunately, even after Naef disclosed and described the Atlanto-Mediterranean diversity within the genus *Sepiola*, many misidentifications have occurred. This fact explains some literature accounts of improbable distributions for *S. rondeletii* as well as for other sepioline species. Since the first trustworthy *S. rondeletii* identifications are those by Naef (1912b), the places of Naef's specimens collection – namely Naples, Villefranche and Trieste, all of them in the Mediterranean Sea – represent the corrected type locality (ICZN, 1999: Recommendation 76A.2). Quite aptly Sweeney (2001) gave the Mediterranean as the type locality of *S. rondeletii*.

Species ***Sepiola aurantiaca*** Jatta, 1896

Work: G. Jatta, 1896. I Cefalopodi viventi nel Golfo di Napoli. (Sistematica). *Fauna und Flora des Golfes von Neapel*, 23 Monographie, Verlag von R. Friedländer & Sohn, Berlin: xxi+268 pp., 31 plts.

Original spelling and combination: *Sepiola aurantiaca* (p. 130).

Definition (species no. 16; in the genus *Sepiola* in the family **Sepiolini**; p. 130):
"**16. Sepiola aurantiaca** n. sp.
Corpus conicum, infra productum, margine inferiore pallii valde sinuato. Cupulae omnium brachiorum biseriatae. Pinnae permagnae, dorso-laterales, antice tantum profunde adscissae.
♂ brachia 1. ambo basim versus duobus cum processis foliaceis et sinistrum non dilatatum; brachia 1., 2., 4. cupulis inter ceteras multo majoribus."
{Body conical, inferiorly [i.e. ventrally] produced, with the mantle inferior [i.e. ventral] margin greatly sinuate. Suckers of all arms biseriate. Fins very large, dorsolateral, deeply incised only anteriorly. // ♂ arms 1. both with two leafy projections at the base and the left [arm] not widened; arms 1., 2., 4. with [some] suckers much larger than the others.}.

Derivation of name: Not stated. From *aurantiacus* (Latin; feminine: *aurantiaca*), orange-coloured.

Type locality: Gulf of Naples, western Mediterranean: "Si pesca nel golfo di rado, e la prima volta fu rinvenuta pelagica nel mese di marzo 1889" (p. 133) {It is fished rarely in the gulf [of Naples; western Mediterranean], and the first time was found pelagic in the month of March 1889}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: Jatta (1896) ascribed to the genus *Sepiola* only the species *S. rondeletii* and *S. aurantiaca*. The original definition, in Latin, is followed by a quite long (two and a half pages) and detailed description in Italian complemented by several illustrations (Jatta, 1896: colour plt. 5, fig. 4; plt. 14, figs. 31-46) drawn by the famed scientific artist Comingio Merculiano (1845-1915).
As regards the original definition, Jatta (1896) termed

the mantle *conicum*, i.e. conical, but in the description wrote that it is *bursiforme*, i.e. purse-shaped. The mention of the not widened left arm aimed at distinguishing the new species hectocotylus from that of *Sepiola rondeletii sensu* Jatta, 1896 as depicted in pl. 14 fig. 28, which clearly pertains to *Sepietta oweniana* (**Fig. 2**). Both the definition and the description reported by Jatta (1896) give the two most important differentiating characters of *S. aurantiaca*, i.e. the ventrally produced mantle margin and the peculiar hectocotylus (**Fig. 2**). According to Naef (1923: 591) "Jatta [...] only accidentally gave a definite diagnosis of the species by his description of the very characteristic hectocotylus." Indeed, Jatta (1896) lumped under the nominal species *S. rondeletii* and *S. aurantiaca* several sepioline species, including some *Sepietta* species, because he did not recognize the diagnostic value of the ink sac shape as suggested by Steenstrup (1887). Jatta (1896) stated that this organ is variable in shape, trilobed in some specimens, pear-shaped in others. We know, now, that only the 'trilobed' ink sac, pertains to the genus *Sepiola* (Naef, 1912a; Bello, 2011). The work by Jatta (1896) is old-fashioned as for the cephalopod systematics; he gave no repository of the type-specimen, no type locality nor *derivatio nominis*.

Species *Sepiola steenstrupiana* Levy, 1912

Work: F. Levy, 1912. Observations sur les Sépioles des côtes de France. *Archives de Zoologie Expérimentale et Générale*, 5ᵉ sér., 9, Notes et Revue (3): LIV-LIX.

Original spelling and combination: *Sepiola steenstrupiana* (p. LVI).

Description (p. LVI):
"[...] nous avons vu de petites Sépioles de Villefranche [...] chez lesquelles le nombre des séries de ventouses des bras ventraux était de trois ou quatre. Ces animaux étaient à maturité sexuelle, car nous avons rencontré des spermatophores bien développés. [...] nous proposons de les nommer *Sepiola steenstrupiana* nov. spec., quand on trouvera qu'il ne s'agit pas seulement d'une variation."
{[...] we observed some little sepioles from Villefranche [...] whose number of sucker series of ventral arms were three or four. These animals were sexually mature because we observed some well developed spermatophores. [...] we propose to name them *Sepiola steenstrupiana* nov. spec., when it will be found that it is not just a variation.}.
In "TABLEAU DICHOTOMIQUE", couplet IV, p. LVIII, the following diagnosis is given:
"Trois ou quatre séries de petites ventouses à l'extrémité des bras ventraux: {Three or four series of suckers at the tip of ventral arms:}
5) *Sepiola steenstrupiana* nov. spec. (?)"

Derivation of name: Deonomastic (adjectival form) from the family name of Japetus Steenstrup (1813-1897) and the affix *-ianus* (Latin; feminine: *-iana*): "Après Steenstrup [...] nous proposons de les nommer *Sepiola steenstrupiana* nov. spec." (p. LVI) {After Steenstrup [...] we propose to name them *Sepiola steenstrupiana* nov. spec.}.

Type locality: "Villefranche" (p. LVIII) [Alpes Maritimes, southern coast of France, western Mediterranean Sea].

Type repository: Not specified.

Remarks: Levy's definition for his new species is quite poor according to that period standards: the only character that the Author based it on is the number of sucker series at the tip of ventral arms. This, in Levy's view, differentiates *Sepiola steenstrupiana* from all *Sepiola* species with only two sucker rows on all arms and notably from *Sepiola atlantica*, which bears "Environ sept séries de petites ventouses à l'extrémité des bras ventraux" {About seven series of little suckers at the tip of the ventral arms} (couplet IV of the dichotomic key; p. LVIII). For sure he somewhat confounded those two species with each other since he identified to *S. atlantica* some specimens from Nice (southern French coast, Mediterranean Sea) (Levy, 1912), whereas we know that the latter species belongs only to the Atlantic fauna (see negative evidence in Bello, 2008).
Besides, the binomen *Sepiola steenstrupiana* Levy, 1912 was conditionally proposed; see both the statement "nous proposons de les nommer *Sepiola steenstrupiana* nov. spec., quand on trouvera qu'il ne s'agit pas seulement d'une variation." (p. LVI) {we propose to name them *Sepiola steenstrupiana* nov. spec., when it will be found that it is not just a variation.} (Levy, 1912a) and the question mark following the new species proposition in "Tableau dichotomique" (p. LVIII).
The story of the publication of *S. steenstrupiana* is instructive of the misconduct of its author, Fritz Levy, who deceitfully succeeded in having it published just a few days before *Sepiola tenera* Naef, 1912 (presently a senior synonym of *S. steenstrupiana* Levy, 1912). I report here below the available chronology of this story:

- 19ᵗʰ December 1911. The Editor of *Zoologischer Anzeiger* received Naef's MS of *Teuthologische Notizen* nos. 1 and 2; the second *Notiz* contained the description of *Sepietta* n. g. (Naef, 1912a).
- 11ᵗʰ January 1912. The Editor of *Zoologischer Anzeiger* received both Naef's MS of *Teuthologische Notizen* no. 3 containing the description of *Sepiola tenera* n. sp. (Naef, 1912b) and Levy's MS titled "Über die Copula von *Sepiola atlantica* D'Orb." {On the copulation of *Sepiola atlantica* D'Orb.} reporting *Sepidium* n. g. and *Sepiola steenstrupiana* n. sp. (Levy, 1912b). Naef's paper was, afterwards, published first (see further) probably because it

Fig. 2. Plate 14 (part) from Jatta (1896) depicting anatomical details of *Sepiola aurantiaca* and "*Sepiola rondeletii*". **A, B, C.** Hectocotylus, body ventral view and body side view, respectively, of *S. aurantiaca*; **D.** Hectocotylus of "*S. rondeletii*", which in fact pertains to *Sepietta oweniana*.

Fig. 2. Tavola 14 (parte) da Jatta (1896) con dettagli anatomici di *Sepiola aurantiaca* e di "*Sepiola rondeletii*". **A, B, C.** Ectocotile e corpo in norma ventrale e laterale di *S. aurantiaca*; **D.** Ectocotile di "*S. rondeletii*", che, in realtà, è proprio di *Sepietta oweniana*.

was part of a series, one may speculate. (As for Levy's misbehaviour relating to *Sepidium*, see the Remarks to the Genus *Sepietta*).

- 27th January 1912. Levy – who had learned (most probably from Naef himself) that two Naef's papers describing *Sepietta* n. g. and *Sepiola tenera* n. sp. were in press in no. 7 of the 39th volume of *Zoologischer Anzeiger* (Naef, 1912a and b), that is before his own paper to be issued in no. 8/9 of the same volume (Levy, 1912b) – completed a paper in French with exactly the same topics and displaying the same figure of his MS in German previously submitted to *Zoologischer Anzeiger* but with a different title, namely "Observations sur les sépioles des côtes de France" {Observations on the sepioles of the French coasts} (Levy, 1912a), which is an additional clue of Levy's fraudulent intent. This paper was soon after submitted to the Editor of *Archives de Zoologie Expérimentale et Générale*.
- 3rd March 1912. Official issue date of Levy's (1912a) French paper and, hence, official publication date of *Sepiola steenstrupiana* Levy, 1912 and *Sepidium* Levy, 1912. Incidentally, the reference list of this paper cites also the next paper by Levy (1912b) which in fact was going to be issued on March the 26th.
- 12th March 1912. Official issue date of Naef (1912a and b) and official publication date of *Sepiola tenera* Naef, 1912 and *Sepietta* Naef, 1912.
- 26th March 1912. Issue date of Levy (1912b), i.e. the German paper with the description of *Sepidium* n. g. and *Sepietta steenstrupiana* n. sp.; this publication is pointless from the zoological nomenclature standpoint.

To sum up, Levy's attempt to publish his new taxa before Naef's was successful by either nine days, according to the official issue dates of their papers, or only three days in conformity with Levy's (1913: 90) answer to Naef's (1912c) allegations of misbehaviour: "Mir lag und liegt nur an den Tatsachen, nicht an Namen oder zufälliger Priorität um 3 Tage" {I base and based myself only on facts, not on names or on the casual priority of 3 days}. In this respect, Naef (1923) was wrong in reporting February as the publication date of *Sepiola steenstrupiana* Levy, 1912.

Naef's (1912b) original description of this new sepioline is by far more complete and effectual than Levy's (1912a), because Naef, in addition to the number of sucker series at the tip of ventral arms, based it on the morphology of the male hectocotylus, which character has proved to be of paramount importance in discriminating sepiolines from each other (Naef, 1923). On this regard, male specimens were available to Levy as well – "Ces animaux étaient à maturité sexuelle, car nous avons rencontré des spermatophores bien développés" {These animals were sexually mature, since we found well developed spermatophores} (Levy, 1912a: LVI) – but evidently he was unable to detect any other diagnostic characters. Quite ironically Naef himself endorsed the validity of Levy's species firstly by mentioning it as a synonym of his own species "*S. tenera* (Naef 1912) = *S. steenstrupiana* (Levy 1912)" (Naef, 1912c: 83); eventually by accepting it as a valid binomen instead of his *Sepiola tenera* (Naef, 1912c). Indeed Naef might have taken a different course of action had he rejected Levy's binomen by pointing out the deficiency and ambiguousness of its description; in that case *Sepiola tenera* Naef, 1912 would have been the valid name. Additional details on the quarrel between Naef and Levy may be read in Naef (1912c) and Levy (1913).

Roman numerals were used here to indicate the pages of Levy (1912a) because the journal *Archives de Zoologie Expérimentale et Générale* adopted these numerals for *Notes et Revue* (containing short papers) and Arabic numerals for regular *Recherches* in order to avoid any confusion between the pagination of the two sections, issued independently from each other.

Species ***Sepiola intermedia*** Naef, 1912

Work: A. Naef, 1912. Teuthologische Notizen. 3. Die

Arten der Gattungen Sepiola und Sepietta. *Zoologischer Anzeiger*, 39: 262-271.

Original spelling and combination: *Sepiola intermedia* (p. 270).

Diagnosis (in the dichotomous key to "Arten der Gattung *Sepiola*" {Species of the genus *Sepiola*}, "b. Europäische Formen, nach meinen Beobachtungen" {b. European forms, according to my observations}, "II. Alle Arme mit 2 Reihen von Saugnäpfen" {All arms with 2 rows of suckers}, item 4; p. 270, fig. 1*h*) (**Fig. 3**): "4) Habitus zwischen 1) [*S. atlantica*], 3) [*S. rondeletii*] und 5) [*S. robusta*]; Kopf dicker als 3). Nackenband schmäler, etwa 1/4 der Kopfbreite. Farbe wie 3. In der Ausbildung der Arme schließt die Form sich mehr an 1), anderseits an 5) an. Am rechten Dorsalarm sind die mittleren Saugnäpfe der Innenreihe vergrößert (Fig. 1*h*). Das Ende des linken Dorsalarmes ist plump, aber nicht kolbig verdickt, ohne umgebildete Näpfe und nicht abgeknickt, sondern nur leicht zur Seite gebogen. Basalapparat glatter als 1), aber ohne den inneren Lappen von 3). Statt dessen führt eine Einkerbung proximal davon in eine Art Rinne, welche auf der nach oben gewandten Innenseite des Armes gegen dessen Spitze läuft. Dieselbe ist durch die runzeligen Basalpolster der zwei vergrößerten Saugnäpfe der Innenreihe begrenzt und auch bei *S. atlantica* und angedeutet. (Vgl. Pfeffer, loc. cit.,»*S. rondeletii*«.) *S. intermedia* (nov. nom.)". {4) Habitus between 1) [*S. atlantica*], 3) [*S. rondeletii*] and 5) [*S. robusta*]; head thicker than 3). Neck band narrower, about ¼ of head width. Colour as 3. In the development of arms, the shape is closer to 1), different from 5). On the right dorsal arm the middle suckers of the inner row are enlarged (Fig. 1*h*). The end of the left dorsal arm is plump, but not club-shaped thickened, without transformed suckers and not curled, but only slightly bent to the side. Basal apparatus smoother than 1), but without the inner lobe of 3). Instead, an indentation leads proximally therefrom in a kind of groove which runs on the upward facing inner surface of the arm to its tip. The same is bordered by the wrinkled pad of the two enlarged suckers of the inner row and there is an indication also in *S. atlantica*. (Cf. Pfeffer, loc. cit.,»*S. rondeletii*«.) *S. intermedia* (nov. nom.)}.

Derivation of name: Not stated. From *intermedius* (Latin; feminine: *intermedia*), intermediate, with reference to this species habitus relative to *S. atlantica*, *S. rondeletii*, and *S. robusta* (cf. the first line of the Diagnosis).

Type locality: Gulf of Naples, western Mediterranean: "Material: Über 100 Stücke aus Neapel." {Material: more than 100 pieces from Naples.}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: *Sepiola intermedia* is one of the five new species described in Naef (1912b). Its description, as well as all others, is given as a diagnosis within a key describing all European sepiolines. Therefore to understand it completely one should compare it to the other descriptions.
Naef reported *S. intermedia* as a new name ("nov. nom."; see last line of diagnosis), since he believed that this species had been already discovered by Pfeffer and reported as "*S. rondeletii*" (cf. Naef, 1912b: 270). The proposal of *Sepiola intermedia* as a new name is deemed an indication by the ICZN (1999: art. 12.2.3) and makes it a valid name.
The basal apparatus described for *S. intermedia* as well as for the other new species in this work (Naef, 1912b) was later on aptly termed *apparatus copulator* by Naef (1916) himself (see the Description of *Sepietta obscura*).
Naef used to name his new sepioline species according to physical characters, e.g. *minor, tenera, intermedia, robusta* and *ligulata* in this same work (Naef, 1912b).

Species ***Sepiola robusta*** Naef, 1912

Work: A. Naef, 1912. Teuthologische Notizen. 3. Die Arten der Gattungen Sepiola und Sepietta. *Zoologischer Anzeiger*, 39: 262-271.

Original spelling and combination: *Sepiola robusta* (p. 271).

Diagnosis (in the dichotomous key to "Arten der Gattung *Sepiola*" {Species of the genus *Sepiola*}, "b.
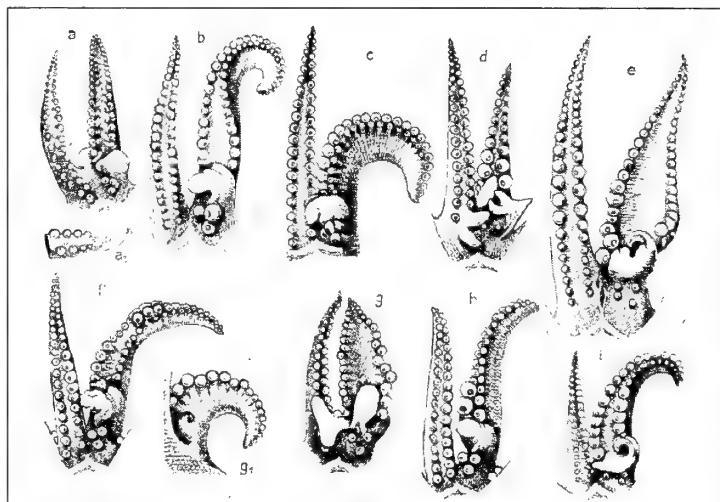
Fig. 3. Pair of dorsal arms of the species *Sepiola tenera* (= *S. steenstrupiana*) (**a** and **a₁**), *Sepiola robusta* (**b**), *Sepiola rondeletii* (**c**), *Sepiola aurantiaca* (**d**), *Sepietta oweniana* (**e**), *Sepiola atlantica* (**f**), *Sepiola ligulata* (**g** and **g₁**), *Sepiola intermedia* (**h**) and *Sepietta* (= *Rondeletiola*) *minor* (**i**). From Naef (1912b: fig. 1).

Fig. 3. Coppia di braccia dorsali delle specie *Sepiola tenera* (= *S. steenstrupiana*) (**a** e **a₁**), *Sepiola robusta* (**b**), *Sepiola rondeletii* (**c**), *Sepiola aurantiaca* (**d**), *Sepietta oweniana* (**e**), *Sepiola atlantica* (**f**), *Sepiola ligulata* (**g** and **g₁**), *Sepiola intermedia* (**h**) e *Sepietta* (= *Rondeletiola*) *minor* (**i**). Da Naef (1912b: fig. 1).

Europäische Formen, nach meinen Beobachtungen" {b. European forms, according to my observations}, "II. Alle Arme mit 2 Reihen von Saugnäpfen" {All arms with 2 rows of suckers}, item 5; p. 271; figs. 1*b* and 2*b*) (**Fig. 3**):

"5) Im Habitus (Fig. 2*b*) der vorigen ähnlich [i.e. *S. intermedia*], aber Farbe rotorange bis rotbraun. Die dunklen (braunpurpurnen) Chromatophoren auf der Ventralseite viel zahlreicher als bei der vorigen. Dorsalarme wie Fig. 1*b* gebildet, d. h. der rechte normal, ohne vergrößerte Saugnäpfe, der linke am Ende hakenförmig zur Seite gebogen, in der Mitte leicht verbreitert; Basalapparat ähnlich wie 1) [*S. atlantica*], 3) [*S. rondeletii*] und 4) [*S. intermedia*]. Von den drei proximalen Saugnäpfen ist der äußere stets beträchtlich vergrößert. Beide Dorsalarme am Grunde etwas verbunden. Die Tentakel sind auffallend groß, mit leicht sichtbaren Näpfen auf den Keulen, die Tiere überhaupt kräftig gebaut. Die Farbe, die Länge der Tentakel usw. lassen die Art mit *Sepietta oweniana* verwechseln, von der sie sich jedoch durch die Bildung der Keule schon äußerlich leicht unterscheidet. *S. robusta* (nov. spec)."

{5) Similar in habitus (Fig. 2*b*) to the preceding one [i.e. *S. intermedia*] but colour red-orange to red-brown. The dark (brown-purple) chromatophores on the ventral side much more numerous than in the preceding one. Dorsal arms shaped as in Fig. 1*b*, i.e. the right one normal, without enlarged suckers, the left one bent to the side like a hook at the end, slightly widened in the middle. Basal apparatus similar to 1) [*S. atlantica*], 3) [*S. rondeletii*] and 4) [*S. intermedia*]. Of the three proximal suckers, the outer distal one is always considerably enlarged. Both dorsal arms somewhat connected at the base. The tentacles are remarkably large, with easily visible suckers on the clubs, the animals developed very strongly. The colour, the length of the tentacles, etc. make the species be confused with *Sepietta oweniana*, but from this it is easily distinguished even externally thanks to the configuration of the club. *S. robusta* (nov.spec).}.

Derivation of name: Not stated. From *robustus* (Latin; feminine: *robusta*), stout. Naef (1923: 605) later on stated "[the species] name refers to the strong development of the whole body an especially of the tentacles."

Type locality: Gulf of Naples, western Mediterranean: "Material: Über 100 Stücke aus Neapel." {Material: more than 100 pieces from Naples.}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: As stated for *Sepiola intermedia*, *Sepiola robusta* is one of the five new species described in Naef (1912b). This description is given as a diagnosis within a key, like *S. intermedia* (see the Remarks to the latter species).

Species *Sepiola ligulata* Naef, 1912

Work: A. Naef, 1912. Teuthologische Notizen. 3. Die Arten der Gattungen Sepiola und Sepietta. *Zoologischer Anzeiger*, 39: 262-271.

Original spelling and combination: *Sepiola ligulata* (p. 271).

Diagnosis (in the dichotomous key to "Arten der Gattung *Sepiola*" {Species of the genus *Sepiola*}, "b. Europäische Formen, nach meinen Beobachtungen" {b. European forms, according to my observations}, "II. Alle Arme mit 2 Reihen von Saugnäpfen" {All arms with 2 rows of suckers}, item 6; p. 271, figs. 1*g* and g_1) (**Fig. 3**):

"6) Dorsalarme wie Fig. l*g* gebildet. Der rechte normal, ohne vergrößerte Näpfe, der linke löffelförmig verbreitert, zugespitzt. Saugnäpfe der Außenreihe größer als die der Innenreihe, am fixierten Tier unregelmäßig aus der Reihe gedrängt, mit verstärkten Trägern. Basalapparat abweichend von den bisherigen gestaltet [i.e. *S. atlantica, S. tenera = steenstrupiana, S. intermedia, S. robusta*], aus 3 Teilen bestehend: 1) ein Zahn auf der Außenseite ist vor der löffelförmigen Verbreiterung nach oben gekrümmt (Fig. 1 g_1); 2) ein spatelförmiger Fortsatz in der Mitte ist nach vorn in den Löffel hineingelegt; 3) ein charakteristisch gestaltetes Läppchen auf der Innenseite sitzt dem Arm mit verschmälerter Basis an. Farbe im Leben orangerot bis rotbraun. Habitus *S. intermedia* ähnlich. Tiefenform. *S. ligulata* (nov. spec)."

{6) Dorsal arms shaped as in Fig. l*g*. The right one normal, without enlarged suckers, the left one widened spoon-shaped, pointed. Suckers of the outer row larger than those of the inner row, in the preserved animal irregularly driven out of line, with strengthened stalks. Basal apparatus arranged differently from the previous [species, namely *S. atlantica, S. tenera = steenstrupiana, S. intermedia* and *S. robusta*], consisting of 3 parts: 1) a tooth on the outer side in front of the spoon-shaped widening is curved upward (Fig. 1 g_1); 2) a spatula-like extension in the middle projects forward into the spoon; 3) a characteristic shaped lobule on the inner side sits on the arm with a narrow base. Colour in life orange-red to red-brown. Habitus similar to *S. intermedia*. Deep [water] form. *S. ligulata* (nov. spec).}.

Derivation of name: Not stated. From *ligula* (Latin), little spoon, and the suffix *-ata* = "with a little spoon", with reference to the spatula-like projection of the copulatory apparatus.

Type locality: Gulf of Naples, western Mediterranean: "Material: 2 Männchen und einige Weibchen aus Neapel." {Material: 2 males and one female from Naples.}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: As stated for *Sepiola intermedia* and *Sepiola robusta*, *Sepiola ligulata* is one of the five new species described in Naef (1912b) in this work. This description is given as a diagnosis within a key, like *S. intermedia* and *S. robusta* (see the Remarks to *S. intermedia*).

Species ***Sepiola affinis*** Naef, 1912

Work: A. Naef, 1912. Teuthologische Notizen. 7. Zur Morphologie und Systematik der Sepiola- und Sepietta-Arten. *Zoologischer Anzeiger*, 40: 78-85.

Original spelling and combination: *Sepiola affinis* (p. 84).

Diagnosis (in the dichotomous key to "Gattung *Sepiola* (Leach 1817)" {Genus *Sepiola* (Leach 1817)}, "Bekannte europäische Arten" {Known European species}, item 4; pp. 83-84, fig. 2*b*) (**Fig. 4**):
"4) Der vorigen sehr ähnlich [i.e. *S. intermedia*], aber Dorsalarme des ♂ wie Fig. 2 zeigt gebildet, d. h. darin der *Sepiola atlantica* nahe stehend. An der Basis stehen die typischen drei kleinen Näpfe, darauf der ohrförmige Basalapparat an dem wie bei 1) [*S. atlantica*], 3) [*S. intermedia*], 4) [*S. affinis*] und 5) [*S. robusta*] ein Außenzahn mehr oder weniger selbständig hervortreten kann (vgl. Fig. 1). Auf der Innenreihe folgen nun 4-5 kleine Saugnäpfe, darauf 3 (2-4) stark vergrößerte, die auf verstärkten Trägern stehen. Die übrigen Saugnäpfe sind normal. Der Arm ist stumpf und zur Seite gebogen. Von dem Hectocotylus von *intermedia* unterscheidet sich der Arm auch in der Rückenansicht (Fig. 2): Es fehlen auf der linken Seite die Basalpolster der bei *intermedia* vergrößerten Näpfe fast völlig und damit die deutliche Rinne (*r*), die bei jener Form an dieser Stelle hervortritt. Dagegen ist die Rückenfläche des Armes wie bei 1) und 3) durch eine scharfe Kante (*k*) am Innenrand begrenzt. Diese Form könnte auch als Varietät von *intermedia* gefaßt werden; doch kommt sie in Neapel scharf getrennt neben dieser vor und weit davon in Cancalle in völlig gleicher Ausbildung. Im Leben wie *intermedia* dunkel kaffeebraun oder rotbraun gefärbt.
S. affinis (nov. spec)."
{Very similar to the preceding one [i.e. *S. intermedia*], but the dorsal arms of ♂ formed as shown in Fig. 2, i.e. as for them it is close to *Sepiola atlantica*. At the base there are the typical three small suckers, on the ear-shaped basal apparatus can emerge an outer tooth more or less separate as in 1) [*S. atlantica*], 3) [*S. intermedia*], 4) [*S. affinis*] and 5) [*S. robusta*] (see Fig. 1). On the inner row now 4-5 small suckers follow, after them 3 (2-4) greatly enlarged [suckers], they stand on strengthened stalks. The other suckers are normal. The arm is blunt and bent to the side. The arm differs from the hectocotylus of *intermedia* also in the rear view (Fig. 2): on the left side the basal pad of the enlarged suckers is almost completely absent in *intermedia* and with it [there is] the distinct groove (*r*), that emerges at this point in that form [i.e. *S. intermedia*]. However the back surface of the arm is restricted at the inner edge by a sharp border (*k*), as in 1) and 3). This form could also be taken as a variety of *intermedia*; but it occurs in Naples clearly separated from and next to this [i.e. *S. intermedia*] in front of it [Naples] and far away from it in Cancalle [*sic!* indeed Cancale, Gulf of Saint Malo] in absolutely the same formation. In life coloured as *intermedia* dark coffee-brown or red-brown. *S. affinis* (nov. spec.)}

Derivation of name: Not stated. From *affinis* (Latin; feminine: *affinis*), close to, with reference to its similarity to *S. intermedia*.

Type locality: Gulf of Naples, western Mediterranean: "Vorkommen: Neapel (13 Stück)..." {Occurrence: Naples (13 specimens)...}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.
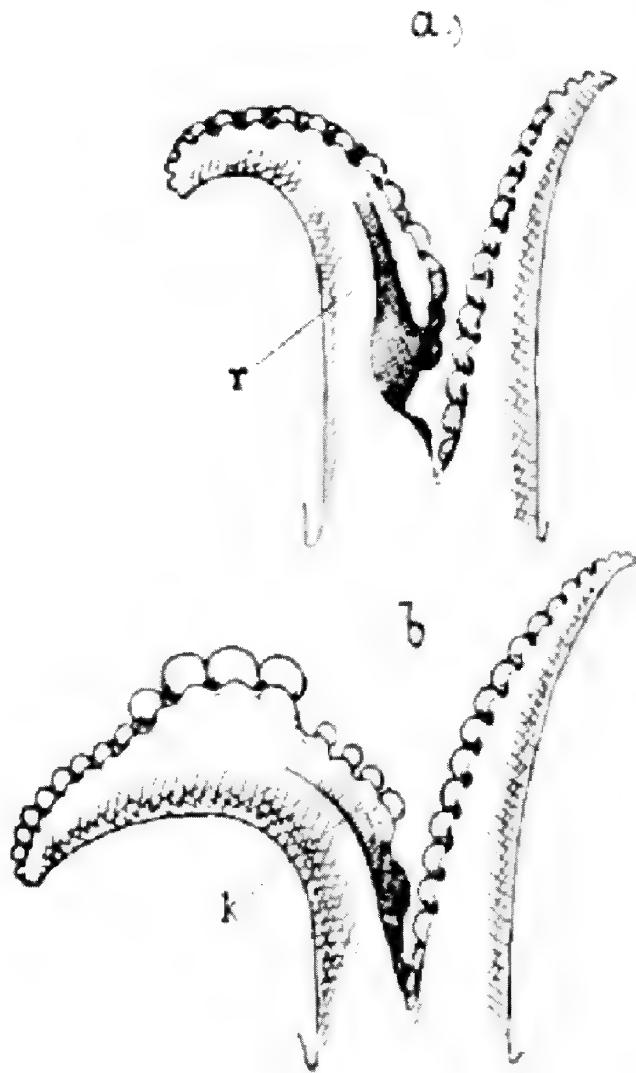
Fig. 4. Drawings by Naef (1912c: fig. 2) comparing the *Sepiola affinis* hectocotylus (**b**) with that of *Sepiola intermedia* (**a**).

Fig. 4. Disegni da Naef (1912c) che mettono a confronto l'ectocotile di *Sepiola affinis* (**b**) con quello di *Sepiola intermedia* (**a**).

Remarks: In this work Naef (1912c) gave once again, as in his previous paper from the same year (1912b), the description of the known European *Sepietta* and *Sepiola* species, two and eight specific taxa respectively. Among these, the only new species was *Sepiola affinis*. Like *Sepiola intermedia*, *Sepiola robusta* and *Sepiola ligulata*, also the diagnosis of this new species is given in a comparative way; hence to fully appreciate it one should take into account the other descriptions.
As for the material used to erect the new species, Naef (1912c: 84) wrote "Vorkommen: Neapel (13 Stück), Cancalle [*sic!* indeed Cancale] (1)", where Cancale is in the Gulf of St. Malo, The Channel, hence the type locality of *S. affinis* should encompass the Gulf of Naples and the Gulf of St. Malo according to the ICZN (1999: art. 76.1). Seemingly Naef received some sepiolines (two females and two males) allegedly collected in Cancale by Fritz Levy, who had reported them as "*vulgaris* (Gervais et Van Beneden)". The two females were identified by Naef to *S. tenera* (= *S. steenstrupiana*), each of the two males respectively to *S. rondeletii* and to the n. sp. *S. affinis* (Naef, 1912c: 81). Indeed, we now know that all these three species do not occur in the north-eastern Atlantic Ocean (Groenenberg et al., 2009). Hence two possibilities are open: first, Naef misidentified all specimens; second, the collection locality was wrong, because of either Levy's or Naef's mislabelling, and the sepiolines had been collected in the Mediterranean. The latter hypothesis is the most plausible since it is hard to believe that Naef was unable to identify species described by himself. To sum up, the Gulf of St. Malo is not considered herein as part of the type locality in agreement with Recommendation 76A.2 of the ICZN (1999) which asks that "A statement of a type locality that is found to be erroneous should be corrected".

Species *Sepiola bursadhaesa* Bello, 2013

Work: G. Bello, 2013. Description of a new sepioline species, *Sepiola bursadhaesa* n. sp. (Cephalopoda: Sepiolidae), from the Catalan Sea, with remarks and identification key for the *Sepiola atlantica* group. *Scientia Marina*, 77: 489-499.

Original spelling and combination: *Sepiola bursadhaesa* (p. 491).

Diagnosis (p. 491):
"*Sepiola* with biserial suckers on all arms, including tips of arms IV; ventral margin of mantle slightly sinuate, with low rounded projection on each side of funnel; tentacle clubs with six oblique rows of suckers, those of two dorsal rows and some in middle of third row larger than others; bursa copulatrix small and ear-shaped, posterior rim fused throughout its length to inner side of mantle; hectocotylus not evidently curved with three regular equal-sized suckers in basal part, copulatory apparatus typical, dorsal tubercle very wrinkled, projecting outward, distal part with dorso-lateral groove on inner side, first three suckers of dorsal row enlarged and incomplete circular groove perpendicular to arm axis separating distalmost third of arm from proximal part."

Derivation of name: From *bursa*, purse (late Latin) + *adhaesa*, adhering (Latin) = "with the bursa adhering", with reference to the bursa copulatrix posteriorly fused with the inner mantle wall.

Type locality: "Catalan Sea, western Mediterranean Sea."

Type repository: Museo Nacional de Ciencias Naturales in Madrid. Holotype: MNCN 15.06/226H, female, 18 mm ML, from the Barcelona fish market (Spain); paratypes: MNCN 15.06/226P1 to 15.06/226P9, 3 females and 6 males, 15-24 ML, from the Barcelona fish market (Spain).

Remarks: The species diagnosis is complemented by a thorough description that includes 10 figures and a table with measurements of and notes on the type series specimens. The new species is also compared with the other species of the *Sepiola atlantica* group *sensu* Naef, 1923.
The discovery and description of *Sepiola bursadhaesa* occurred at the distance of almost a century since the publication of the previous record of new Mediterranean sepiolids (Naef, 1916).

Genus *Sepietta* Naef, 1912

Work: A. Naef, 1912. Teuthologische Notizen. 1. Die Familien der Myopsiden; 2. Die Gattungen der Sepioliden. *Zoologische Anzeicher*, 39: 241-248.

Original spelling: *Sepietta* (p. 248).

Diagnosis (in subfamily Sepiolinae; p. 248):
"Leuchtorgane fehlen. Saugnäpfe auf den Armen wie bei b [i.e. *Sepiola*], auf den Tentakelkeulen in 16 oder mehr Reihen und sehr klein. Nackenband, Habitus, Hectocotylisation wie bei b. Schale sehr schwach entwickelt, nicht immer deutlich.
4. Gattung: *Sepietta* (gen. nov.)".
{Light organ absent. Suckers on the arms as in b [i.e. *Sepiola*], on the tentacle club in 16 or more rows and very small. Neck band, habitus, hectocotylization as in b. Shell very weekly developed, not always visible. 4. Genus: *Sepietta* (gen. nov.)}.

Derivation of name: Not stated. From *Sepia*, the cuttlefish genus, and the diminutive suffix *-etta* = "little *Sepia*".

Gender: feminine.

Type species: *Sepiola oweniana* d'Orbigny *in* Férussac & d'Orbigny, 1841, by monotypy. It was explicitly designated by the Author (Naef, 1912a: 248): "Hierher als typische Art *S. oweniana* (D'Orb.)" {Here as type species *S. oweniana* (D'Orb.)}.

Other species originally included in the genus: none.

Remarks: The diagnosis of *Sepietta* was given within the identification key for the genera of the Sepiolidae, where it was differentiated from the genus *Sepiola*.
As regards d'Orbigny's publication of the type species, Naef (1912a: 248) cited "Mollusques vivants et fossiles. Paris, 1855". Apart from the wrong date of this work, actually 1845, *Sepiola oweniana* was originally published in Férussac & d'Orbigny (1834-48) (for the correct publication date, see the Remarks to the species *Sepietta oweniana*).
Levy (1912a) created the new genus *Sepidium* to accommodate *Sepiola oweniana* d'Orbigny, 1841 and deceitfully succeeded in publishing it just few days before *Sepietta* Naef, 1912 (see the Remarks to the species *Sepiola steenstrupiana*). According to Naef (1923: 620) Levy, before submitting his paper, had received "some specimens [of *S. oweniana*] sent by myself, with a note to the effect that they belong to a genus different from *Sepiola*". Contrary to what happened with *Sepiola steenstrupiana* Levy, 1912 vs. *Sepiola tenera* Naef, 1912, Levy's attempt to publish his *Sepidium* in advance of Naef's publication of *Sepietta* eventually failed because that name was a junior synonym of *Sepidium* Fabricius, 1775 (Insecta: Terebrionidae) and hence invalid.

Species ***Sepietta oweniana*** (d'Orbigny *in* Férussac & d'Orbigny, 1841)

Work: A.E. de Férussac et A. d'Orbigny, 1834-48. Histoire naturelle générale et particulière des Céphalopodes acétabulifère vivants et fossiles. J.-B. Baillière, Paris. Tome Premier, Text: lvi+361 pp.; Tome Second, Atlas: 144 plts.

Original spelling and combination: *Sepiola Oweniana* (p. 229).

Definition (species no. 1 in the genus *Sepiola*; in the family Sépidées; pp. 229-230):
"N° 1. SÉPIOLE D'OWEN. – *SEPIOLA OWENIANA, d'Orbigny*."
Excerpts from *Description*:
"Rapports et différences. Par ses cupules alternes, sur deux lignes seulement, par son appareil de résistance, cette espèce se rapproche de la *Sepiola Rondeletii*; mais elle s'en distingue facilement par une forme plus allongée, par son corps ovoïde, par ses nageoires, plus petites, plus larges, par sa tête plus longue, par se bras sessiles, beaucoup plus longs, par ses bras contractiles, de plus du double de longueur, et non élargie à leur extrémité, et peut-être par la manque d'osselet. C'est, au reste, de toutes les espèces, la plus allongée, et celle dont les bras contractiles sont couverts de plus petites cupules."
{Relationships and differences. Because of its alternate suckers, on two rows only, because of its locking apparatus, this species is close to *Sepiola Rondeletii*; but it can be easily told apart because of the longer form, its ovoid body, its fins, smaller and broader, its longer head, its sessile arms, much longer, its contractile arms [i.e. tentacles], more than the double longer and not enlarged at their tip, and maybe because of the lack of the little bone [i.e. gladius]. It is, in the end, of all the species [of the genus], the longest and the one whose contractile arms bear the smallest suckers.}.
As regards the tentacle club suckers, the following description is reported three paragraphs above:
"Cette partie [i.e. the club] […] est pourvue […] de cupules si petites et si rapprochées, qu'à l'aide d'une forte loupe on ne distingue encore qu'une surface papilleuse, ou veloutée."
{This part [i.e. the club] […] is provided […] with so small and so close suckers that by a powerful magnifying glass one just perceives a papillate and velvety surface.}.

Derivation of name: Deonomastic (adjectival form) from the family name of Richard Owen (1804-1892) and the affix *-ianus* (Latin; feminine: *-iana*): "nous la dédions à M. Owen" (d'Orbigny, 1841: 230) {We dedicate it to Mr. Owen.}.

Type locality: Unknown; "nous ignorons entièrement d'où ils viennent" {We do not know at all whence they [i.e. the two type specimens] come} (d'Orbigny, 1841: 230).

Type repository: "Nous en avons examiné deux exemplaire, l'un appartenant au Muséum d'histoire naturelle, l'autre a notre collection" {We examined two specimens, one belonging to the natural history Museum [in Paris], the other to our collection}. Both of them are lost (*fide* Lu et al., 1995, as for the Paris Museum).

Remarks: The description, in French, in the Text (vol. 1) refers also to figs. 1-5 in plate 3 of Sépioles in the Atlas (vol. 2) (**Fig. 5**).
The publication of Férussac and d'Orbigny's work spanned over 15 years during which period it faced intricate events. The precise publication dates of the 21 *livraisons* that compose this work are still uncertain. According to Tillier & Boucher-Rodoni (1993) pages 229-230, i.e. those reporting *S. oweniana* original description, were published between 1839 and 1841, whereas plate 3 of Sépioles between 1839 and 1842. Since only ranges of dates are known, the relevant pages and plate are to be dated from the final day of their ranges (Art. 21.6 of the ICZN, 1999).
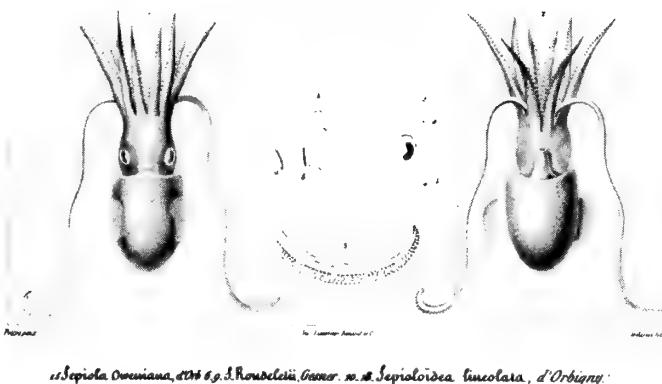
Fig. 5. Plate 3 of Sépioles (part) from Férussac & d'Orbigny (1834-48: Atlas) depicting *Sepiola* (= *Sepietta*) *oweniana*.

Fig. 5. Tavola 3 delle Sépioles (parte) da Férussac & d'Orbigny (1834-48: Atlas) illustrante *Sepiola* (= *Sepietta*) *oweniana*.

Hence the description in words (pages 229-230) is to be dated to 1841, whereas the figures in the plate 3 to 1842. To sum up, despite the fact that both parts of the description, i.e. in words and figured, were probably published together, the earliest reliable publication date, namely 1841, relates just to the text, so that figs. 1-5 in plate 3 of Sépioles cannot be deemed as a part of the original description. Incidentally, several papers and handbooks report *S. oweniana* publication dates different than 1841, as well as even ranges of years, which is not correct according to the ICZN.
The paternity of this species, in this multi-authored work, was clearly stated by d'Orbigny himself.
The description given by d'Orbigny is quite long (two pages), but it may relate to most sepiolines, save for a few details. The related figures also provide no exclusive character. Despite the Author did not provide any formal definition, the paragraph Rapports et différences plays in fact the role of a definition. Here the new species is compared to *S. rondeletii*, but we have to bear in mind that many sepioline species were lumped under this name at that time. In my opinion, the most fitting characters of the description are the size and quantity of suckers on the tentacle club that give it a velvety appearance, a feature unique for *S. oweniana*. For this reason, Naef's statement that d'Orbigny's "description applies also to *S. obscura*" (1923: 624) is, in my opinion, not appropriate.

Species *Sepietta obscura* Naef, 1916

Work: A. Naef, 1916. Ueber Neue Sepioliden aus dem Golf von Neapel. *Pubblicazioni della Stazione Zoologica di Napoli*, 1: 1-10.

Original spelling and combination: *Sepietta obscura* (p. 4).

Description (pp. 4-7; figs. 1a and 2a):
"1. **Sepietta obscura** nov. spec."

Excerpts from the description:
"Der Hectocotylus von *S. obscura* ist folgendermassen gebildet: (*Fig.* 2 a). Am Grunde verbindet ihn eine wulstige Hautfalte auf eine kleine Strecke mit dem rechten Dorsalarm [...]. Vor dem *Apparatus copulator* stehen, wie bei den meisten *Sepiola*-Arten, drei kleine Näpfe [...] (wie bei *Textfig.* 2 a) [...]. Der *Apparatus* stellt einen queren Kamm dar, an dem man deutlich vier Erhebungen beobachtet, von denen die lateralste eine gewöhnlich einwärts gekrümmten Zahn darstellt, welcher mehr oder weniger frei steht. [...] [Die Saugnäpfchen] sind auf der Innenreihe normal ausgebildet, die ersten jedoch merklich stärker als am rechten Dorsalarm vergrössert, am stärksten der erste [...]; gegen die Spitze hin nimmt die Grösse der Näpfe gleichmässig ab. [...]
Die Tentakelkeule trägt mässig kleine Näpfchen, von denen auf den schrägen Querreihen, die man, wenigsten in der Nähe des Schwimmsaums, deutlich erkennen kann, weniger als 16 (meist zählt man in mittleren Teil etwa 12) stehen. [...] Die Flossen zeigen einen nahezu kreis förmigen Umriss [...]. Die Färbung des lebenden Tieres ist, in völlig wohlbehaltenem Zustand, rotbraun, entschieden dunkler (daher der Name) als bei folgenden Art [i.e. *Sepietta oweniana*] [...]".
{The hectocotylus of *S. obscura* is formed as follows: (*Fig.* 2 a). At the base it is connected with the right dorsal arm for a short tract by a swollen skin fold [...]. Before the *Apparatus copulator*, as with most *Sepiola*, there are three small suckers [...] (as in *Textfig.* 2 a) [...]. The *Apparatus* is a transverse ridge on which we clearly observe four elevations, of which the most lateral usually forms an inward curved tooth that is more or less free. [...] [The suckers] of the inner row are developed normally, but the first ones are noticeably larger than those on the right dorsal arm, the first the largest [...]; the sucker size decreases uniformly toward the apex. [...]
The tentacle club bears comparatively small suckers on oblique transverse rows; less than 16, least of all near the swimming keel, can clearly be recognized (in the central part usually are counted about 12). [...] The fins show a nearly circular outline [...]. The colour of the living animals, in fully healthy condition, is red-brown, decidedly darker (hence the name) than in the following species [i.e. *Sepietta oweniana*] [...]}.

Derivation of name: From *obscurus* (Latin; feminine: *obscura*), dark-coloured. "Die Färbung des lebenden Tieres ist, in völlig wohlbehaltenem Zustand, rotbraun, entschieden dunkler (daher der Name) als bei [*Sepietta oweniana*]" {The colour of the living animals, in fully healthy condition, is red-brown, decidedly darker (hence the name) than in [*Sepietta oweniana*]} (Naef, 1916: 5).

Type locality: Gulf of Naples, western Mediterranean, and Trieste, northern Adriatic Sea: "Neapel 500

Stück, Triest 300 Stück." {Naples 500 specimens, Trieste 300 specimens.} (Naef, 1916: 7).

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: In this work Naef (1916) described his last new sepioline species, namely *Sepietta obscura* and *Sepietta neglecta*. Both descriptions are very detailed and lengthy (two pages that of *S. obscura*) with respect to the diagnoses of his previously erected new species, given in a comparative mode. Naef became progressively aware of the paramount importance of the hectocotylus, that is why he portrayed the *Sepietta* species starting with the copulatory arm, depicted most accurately. Moreover, in this work the Author used for the first time the Latin term *Apparatus copulator* (Naef, 1916) instead of Basalapparatus, previously used by him, to indicate the group of modified sucker stalks following the first three or four suckers at the arm base. He, afterwards, named in Latin also the female counterpart, i.e. *bursa copulatrix*.
As reported in the Remarks to the species *Sepiola intermedia*, all sepioline specific names created by Naef refer to physical characters of the animals, such as *robusta, tenera, ligulata*, often with a comparative significance, viz. *affinis, intermedia, neglecta, minor*. *Obscura* is no exception (see its Derivation of name). Indeed *obscurus*, in addition to the proper sense of 'devoid of light' and 'dark-coloured', has also the figurative one of 'obscure', 'not clear to the understanding'; Naef (1916), however, unambiguously referred to the former meaning. As already expressed in Bello (2011: 555), "the genesis of the FAO official names, that is 'mysterious bobtail squid' (English), 'sépiole mystérieuse' (French) and 'sepieta misteriosa' (Spanish) (e.g. Reid & Jereb, 2005), is really a mystery! It would be appropriate to re-name this species 'dark bobtail squid'."
The synonym *Sepietta petersii* (Steenstrup, 1887), revived by Nesis (1982, 1987) and subsequently used by few authors, appears to be invalid (Bello, 2011).

Species *Sepietta neglecta* Naef, 1916

Work: A. Naef, 1916. Ueber Neue Sepioliden aus dem Golf von Neapel. *Pubblicazioni della Stazione Zoologica di Napoli*, 1: 1-10.

Original spelling and combination: *Sepietta neglecta* (p. 9).

Description (pp. 9-10; figs. 1b and 2b):
"3. **Sepietta neglecta** nov. spec."
Excerpts from the description:
"Der Hectocotylus (*Textfig. 2* b) von *Sepietta neglecta* zeigt am Grunde vier kleine, normal gestellte Näpfe, ebenso wie bei der vorigen Art [i.e. *S. oweniana*]; darauf folgt der Apparatus copulator. Derselbe scheint auf den ersten Blick kaum von dem der vorigen Art verschieden [...]. Der distale Armteil weist die typische löffelartige Verbreiterung auf; seine innere Napfreihe zeigt zuerst vier ziemlich beträchtlich und gleichmässig vergrösserte Saugnäpfe, darauf einen sehr merklich kleineren, an den sich weiterhin etwa 15, an Grösse langsam und gleichmässig abnehmende Näpfe anschliessen. [...]
Die Art schliesst sich eng an *Sepietta Oweniana* an, ist aber viel kleiner als diese und erreicht kaum 5 cm. Gesamtlänge. Die Flossen (*Textfig. 1* b) zeigen noch stärker als bei der vorigen Art den herzartigen Umriss [...].
Die Tentakel sind auffallend zart und die Keule klein und schmal mit gleichmässig sehr kleinen Näpfen besetzt [...]. Sie stehen auf den schrägen Reihen zu über 16. Der Färbung nach gleichen die Tiere der *S. obscura*, sind also im Leben wohl dunkel rotbraun. [...]".
{The hectocotylus (*Textfig. 2* b) of *Sepietta neglecta* shows four small normally situated suckers at the base, as in the previous species [i.e. *S. oweniana*]; next the apparatus copulator follows. At first glance this seems hardly different from that of the previous species [...]. The distal part of arm has the typical spoon-like widening; its inner sucker row shows the first four suckers quite considerably and uniformly enlarged, then follows one noticeably smaller, then about 15 suckers, their size slowly and steadily declining. [...].
The species is very close to *Sepietta Oweniana*, but it is much smaller than this and hardly reaches 5 cm. in total length. The fins (*Textfig. 1* b) show the heart-shaped outline even more than in the previous species [...].
The tentacles are remarkably delicate and the clubs small and narrow covered with uniform very small suckers [...]. They stand in up to more than 16 oblique rows. The colouration resembles the animals of *S. obscura* that are dark red-brown also in life. [...]}.

Derivation of name: Not stated. From *neglectus* (Latin; feminine: *neglecta*), neglected, probably because of its diminutive appearance with respect to *S. oweniana*, the species to which it is consistently compared.

Type locality: Gulf of Naples, western Mediterranean: "Material. – Etwa 100 Stücke aus dem Golf von Neapel." {Material. – About 100 pieces from the Gulf of Naples.}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: This is the last Mediterranean sepioline species described by Naef. In this work, Naef (1916) described also the new species *Sepietta obscura*. As in that case, the description of *Sepietta neglecta* is quite detailed and long (more than a page) and several details not strictly aimed at discriminating this from the other two *Sepietta* species are given.

As reported above, all sepioline specific names created by Naef refer to physical characters of the animals, often with a comparative meaning, which may be the case of *neglecta*.

Genus *Rondeletiola* Naef, 1921

Work: A. Naef, 1921. Das System der dibranchiaten Cephalopoden und die mediterranen Arten derselben. *Mitteilungen aus der Zoologischen Station zu Neapel*, 22: 527-542.

Original spelling: *Rondeletiola* (p. 536).

Definition (in the subfamily Sepiolinae, p. 536, and note 23 at p. 541):
"*Rondeletiola* nov.[23]."
"[Note] 23. [...] *Rondeletia* (Naef 1916) ist vergeben und soll weiterhin durch *Rondeletiola* ersetz werden." {*Rondeletia* (Naef 1916) is assigned [i.e. already occupied] and from now on will be replaced by *Rondeletiola*.}.

Derivation of name: Not stated. From *Rondeletia*, a name formed from the personal name of Guillaume Rondelet (1507-1566), and the diminutive suffix *-ola* = "little *Rondeletia*".

Gender: feminine.

Type species: *Sepietta minor* Naef, 1912, by monotypy.

Other species originally included in the genus: none.

Remarks: *Rondeletiola* Naef, 1921 is a new replacement name (*nomen novum*) for *Rondeletia* Naef, 1916, since the latter was a junior homonym of *Rondeletia* Good & Bean, 1895 (Osteichthyes: Rondeletiidae). In his work from 1921, Naef first mentioned "*Rondeletiola* nov.[23]" at page 536 in the list of "Familien und Gattungen der Tintenfische" (the overall list of families and genera of coleoids); then at page 538, in the list of Mediterranean species, combined with the specific name, "*Rondeletiola minor* Naef (1912) nov. gen."; lastly in note 23, at p. 541, he made even more explicit his replacement purpose. Later on he explained that "The generic name [*Rondeletia*] is preoccupied by a fish" (Naef, 1923: 609).
Naef (1916) had described the new genus *Rondeletia* to accommodate his own species *Sepietta minor* Naef, 1912 after having discovered its peculiar roundish light gland embedded in the widened ink sac.
The genus *Rondeletiola* is monotypic.

Species *Rondeletiola minor* (Naef, 1912)

Work: A. Naef, 1912. Teuthologische Notizen. 3. Die Arten der Gattungen Sepiola und Sepietta. *Zoologischer Anzeiger*, 39: 262-271.

Original spelling and combination: *Sepietta minor* (p. 267).

Diagnosis (in the dichotomous key to "Arten der Gattung *Sepietta*" {Species of the genus *Sepietta*}; item 2 (item 1 is "*S. oweniana* (D'Orb. 1839)"); p. 267, figs. 1*i* and 2*d*) (**Fig. 3**):
"Tiere klein, nicht über 4 cm (Fig. 2*d*). Habitus und Färbung ähnlich wie 1) [*Sepietta oweniana*], aber mehr rotorange bis rotbraun, dunkler und lebhafter gefärbt. Chromatophoren auf der Ventralseite des Mantels dichter, rotbraun. Linker Dorsalarm nicht löffelförmig verbreitert, am fixierten Tier zur Seite gebogen (Fig. 1*i*), Außenzahn des Basalapparates sehr stark, von oben sichtbar (Fig. 2*d*) und hakenförmig nach innen gekrümmt. Daran bildet der zweite nur einen unbedeutenden Höcker. Der Querkamm ist proximal gerichtet, ohne abgesetzte Erhebungen. Die Saugnäpfe im mittleren Teil des Armes sind vergrößert, die auf den Zahn folgenden der Außenreihe sehr klein oder unterdrückt.
S. minor (nov. spec.)."
{2) Animals small, not over 4 cm (Fig. 2*d*). Habitus and colour similar to 1) [*Sepietta oweniana*], but more red-orange to red-brown, darker and more intensely coloured. Chromatophores of mantle ventral side dense, red-brown. Left dorsal arm not spoon-shaped widened, in preserved animals curved laterally (Fig. 1*i*), lateral tooth of basal apparatus very strong, visible dorsally (Fig. 2*d*) and hook-like inward curved. It develops the second, just an insignificant tubercle. The transverse crest is proximally directed, without distinct ridges. The suckers in middle part of arm are enlarged, those of the outer row following the tooth are either small or lost.
S. minor (nov. spec.).}

Derivation of name: Not stated. From *minor* (Latin; feminine: *minor*) = smaller, because of its size relative to *Sepietta oweniana*.

Type locality: Gulf of Naples, western Mediterranean: "Material: etwa 40 Stücke aus Neapel." {Material: about 40 pieces from Naples.}.

Type repository: Not specified; however, originally deposited in the Stazione Zoologica of Naples.

Remarks: Later on Naef (1916) found important characters differentiating this species from the others of both genera *Sepietta* and *Sepiola* and therefore erected for it the new genus *Rondeletia*. This name was in fact a junior homonym of an actinopterygian fish genus by Goode & Bean, 1895. When Naef (1921) realized that, he created the new genus *Rondeletiola* to accomodate the sepioline species *minor* (see the Genus *Rondeletiola*).

Subfamily **Heteroteuthinae** Appellöf, 1898

Work: A. Appellöf, 1898. Cephalopoden von Terna-

te. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft*, 24: 561-640.

Original spelling: Heteroteuthinae (p. 624).

Diagnosis (in "Fam. **Sepioladae**; p. 624):
"A. Mantel mit dem Nacken verw (27) achsen.
b. Rückenarme hektokotylisiert.
β. Dorsaler Mantelrand frei. Knorpeliger Nakkenschließapparatus nur im vorderen Teil des Nakkens vorhanden, hinten sind Mantel und Nacken verwachsen. Umbrella stark entwickelt. Unterfam. Heteroteuthinae."
{A. Mantle fused with neck. // b. Posterior arms hectocotylized. // β. Dorsal mantle edge free. Cartilaginous mantle-locking apparatus present only in anterior part of neck, behind mantle and neck fused. Umbrella [i.e. arm web] very much developed. Subfam. Heteroteuthinae.}.

Type genus: *Heteroteuthis* (*Heteroteuth-is* → Heteroteuth-inae).

Other genera originally included in the subfamily: *Nectoteuthis* Verrill, 1883.

Remarks: As mentioned in the Remarks to the subfamily Sepiolinae, Appellöf (1898) placed this subfamily too in the group characterized by mantle fused with neck. Hence the first part of the taxon original definition shares with the Sepiolinae this character as well as the hectocotylization of the rear arms. Moreover the Author did not place *Stoloteuthis* in this subfamily, as presently accepted (Reid & Jereb, 2005), but in the Sepiolinae.
See the Remarks to the subfamily Sepiolinae for the correct title of Appellöf's work.

Genus *Heteroteuthis* Gray, 1849

Work: J.E. Gray, 1849. Catalogue of the Mollusca in the Collection of the British Museum. Part I. Cephalopoda Antepedia. British Museum, London, 164 pp.

Original spelling: *Heteroteuthis* (p. 90).

Diagnosis (within the genus *Rossia*, as second element of key triplet, opposed to the subgenus *Rossia* and to two species doubtfully belonging to the genus *Rossia*, p. 90):
"Cups of lateral three Pairs of Arms very large, peduncled, distant; Cups of other arms small, crowded, equal. Tentacular arms tapering."

Derivation of name: Not stated. From *héteros* (Greek), different + *teuthis* (Greek), squid = "different squid".

Gender: feminine.

Type species: *Sepiola dispar* Rüppell, 1844, by monotypy.

Other species originally included in the subgenus: none.

Remarks: To all appearances, Gray (1849) introduced the new name *Heteroteuthis* to designate a subgenus of the genus *Rossia*. Unfortunately he did not specify neither that this taxon was new nor its taxonomic rank; however, the lack of such indications in no obstacle to its availability (ICZN, 1999: Art. 12). Besides, the name *Heteroteuthis* is not listed in the index at the end of the work. Also *Hyaloteuthis* (Gray, 1849: 63), a new subgeneric name within the genus *Ommastrephes*, was handled alike. Indeed, Gray (1849) did not indicate in any way that his many new nominal taxa (families, genera, subgenera and species) were new.
Gray (1849) gave also an accurate description of the type species *dispar* based on two specimens "in spirits" from Sicily provided to the British Museum by Edward Rüppell, its discoverer (see the species *Heteroteuthis dispar* hereafter).
The nominal taxon *Heteroteuthis* was raised to the genus level by Verrill (1880: 392) when describing the new species *Heteroteuthis tenera* (presently *Semirossia tenera*).

Species *Heteroteuthis dispar* (Rüppell, 1844)

Work: E. Rüppell, 1844. Intorno ad alcuni cefalopodi del mare di Messina. Lettera del Dr. Eduardo Rüppell di Frankfurt sul Meno al Prof. Anastasio Cocco. *Giornale del Gabinetto Letterario di Messina*, 5(27-28): 129-135.

Original spelling and combination: *Sepiola dispar* (p. 133).

Description (p. 133):
"Comunissima è poi la mia
Sepiola dispare
Sepiola dispar (mihi),
la quale distinguesi per le quattro ventose del pajo laterale de' tentacoli che son dieci volte più grandi, che negli altri tentacoli. Ogni tentacolo ha da quindici a venti paja di ventose. I due tentacoli allungati sono assai sottili ed hanno alla loro estremità per lo spazio di due linee moltissime ventose quasi microscopiche. Le membrane natatoje sono rotondate, e sorpassano la metà della lunghezza del sacco viscerale. Nell'animale moribondo il sacco e gli otto tentacoli si coloriscono di rosso scuro, mentre le membrane natatoie ed i due tentacoli laterali rimangono bianchi con alcune macchiette rosse. La lunghezza totale dell'animale è di pollici tre e mezzo."
{Very common is my
Different bobtail squid
Sepiola dispar (to me [i.e. mine]),
which is distinguishable for the four suckers of the lateral pair of tentacle [i.e. arms] which are tenfold larger than in the other tentacles [i.e. arms]. Each ten-

tacle [i.e. arm] has fifteen to twenty sucker pairs. The two lengthened tentacles [i.e. true tentacles] are very thin and have at their end, along the length of two lines, very many almost microscopic suckers. The swimming membranes [i.e. fins] are round and longer than half the visceral sac [i.e. mantle]. In the dying animal the sac and the eight tentacles [i.e. arms] become dark red coloured, while the swimming membranes and the two lateral tentacles [i.e. true tentacles] stay white with some red speckles. The animal total length is three and a half inches.}.

Derivation of name: Not stated. From *dispar* (Latin; feminine: *dispar*), different, with reference to the noticeable differences from the other known sepiolines.

Type locality: Sea of Messina, Mediterranean Sea: "… cefalopodi da me rinvenuti nel mare di Messina."{… cephalopods found by me in the sea of Messina.}.

Type repository: Not specified. According to Sweeney (2001) type specimens are in the Natural History Museum, London, and in the Naturmuseum und Forschungsinstitut Senckenberg, Frankfurt.

Remarks: It is not possible to convert exactly into the decimal system the measures given by Rüppell in lines and inches because those measure units were somewhat variable from one country to the other, the line ranging from 1.79 (Sicilian) to 2.26 mm (French) and the inch from 2.18 (Sicilian) to 2.71 mm (French); in particular the Frankfurt line and inch corresponded to 1.98 mm and 2.38 cm respectively. Hence the tentacle club length reported by Rüppell was about 4 mm and the animal total length, tentacles included, between 8 and 8.5 cm.
In his paper Rüppell described several new species, some of them considered valid at the present, namely *Enoploteuthis* (= *Pyroteuthis*) *margaritifera*, *Enoploteuthis* (= *Abralia*) *verany*, *Octopoteuthis sicula* and *Sepiola* (= *Heteroteuthis*) *dispar*. All of them are pelagic cephalopods that, along with many other pelagic animals, are commonly beached, hence easily accessible, thanks to the strong upwelling currents of the Strait of Messina (Mazzarelli, 1909).
As for the presence of possible type specimens in the Natural History Museum in London, see also the Remarks to the subfamily Heteroteuthinae.

Genus ***Stoloteuthis*** Verrill, 1881

Work: A.E. Verrill, 1881. The Cephalopods of the Northeastern Coast of America. Part II. The smaller cephalopods, including the "squids" and the octopi, with other allied forms. *Transactions of the Connecticut Academy of Sciences*, 5(6): 259-446; plts. XXVI-LVI.

Original spelling: *Stoloteuthis* (p. 417).

Definition (in APPENDIX, p. 417):
"Body short and thick, well-rounded. Head large, united to mantle by a broad dorsal commissure. Eyes large; pupils round; eye-lids free all around. No pen. Mantle thick, extending farther forward beneath than laterally. Fins large, lateral. Siphon with an internal valve, in both sexes; connective cartilages oblong, with a central groove, fitting a linear ridge, on each side of the mantle; these do not extend to the edge of the mantle. Arms webbed for more than half their length, except between the ventral arms; second pair, in the male, and some females, with two or three much enlarged suckers near the middle. The suckers of all arms are relatively larger in the male than in the female; dorsal arms of the male alike; their basal suckers are larger and more crowded than in the female; no other evidence of hectocotylization could be found."

Derivation of name: Not stated. Possibly from *stola* (Latin), stole + *teuthis* (Greek), squid = "squid with a stole". I assume that the first part of the compound name, *stolo-*, refers to the Christian priest's vestment consisting of a band of coloured silk cloth worn over the shoulders of which the blue-coloured border and the silvery band surrounding the shield-area in the ventral surface of the mantle remind (*cf.* Verrill, 1881: p. 348 and pl. XXXI, fig. 4) (**Fig. 6**).

Gender: feminine.

Type species: *Sepiola leucoptera* Verrill, 1878, by original designation: "Type, *Sepiola leucoptera* Verrill."

Other species originally included in the genus: none.
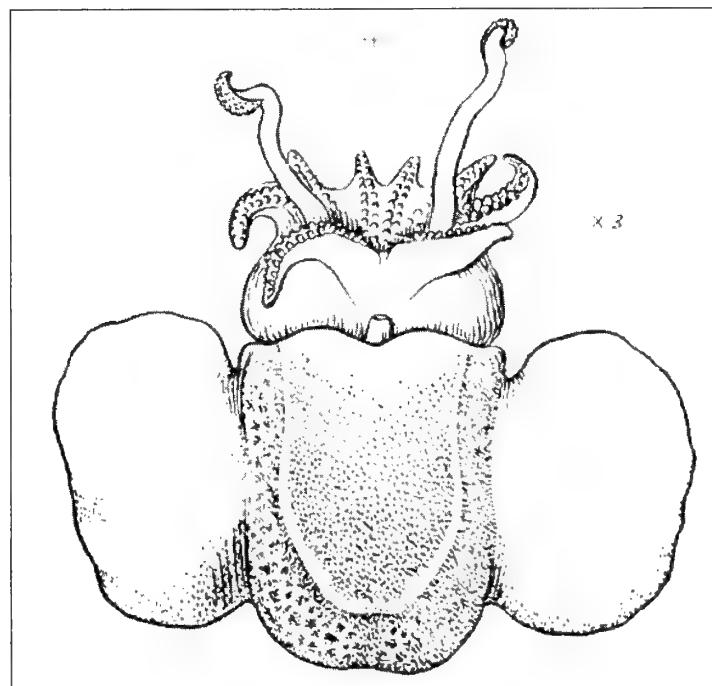
Fig. 6. Ventral side of *Stoloteuthis leucoptera* (from Verrill, 1881: pl. XXXI, fig. 4).

Fig. 6. Faccia ventral di *Stoloteuthis leucoptera* (da Verrill, 1881: tav. XXXI, fig. 4).

Remarks: Verrill (1881) established the new genus, by the words "**Stoloteuthis** Verrill, gen. nov.", in the Appendix to the main paper thanks to the collection of supplementary specimens of *S. leucoptera*. Moreover he took advantage of those specimens to thoroughly re-describe the species.
A compound name whose final component *-teuthis* (the Greek noun for squid) is recurrent in the sepiolid, as well as in general cephalopod nomenclature, starting with *Heteroteuthis* Gray, 1849. Probably Verrill, and Naef later on, devised their new genus names *Stoloteuthis* Verrill, 1881, *Inioteuthis* Verrill, 1881, *Nectoteuthis* Verrill, 1883 and *Iridoteuthis* Naef, 1912 in line with Gray's precedent.
Until rather recent times the genus *Stoloteuthis* was believed to contain the species *S. leucoptera* only (cf. Reid & Jereb, 2005). According to Vecchione & Roper (2014) additional heteroteuthine species are to be transferred to *Stoloteuthis*.

Species ***Stoloteuthis leucoptera*** (Verrill, 1878)

Work: A.E. Verrill, 1878. Notice of recent addition to the Marine Fauna of the eastern coast of North America. *American Journal of Science and Arts*, third series, 16: 371-378.

Original spelling and combination: *Sepiola leucoptera* (p. 378).

Description (in "Mollusca", p. 378):
"Species probably small, but the three specimens observed are probably not full grown. Body short, depressed, with the mantle smooth. Ventral surface, in middle, with a somewhat flattened heart-shaped or shield-shaped area, surrounded, except in front, by a silvery white band, having a pearly or opalescent luster. Eyes small, with round pupils. Fins large, in the living specimens nearly as long as body, broadly rounded; the posterior lobe reaches nearly to end of body, the anterior edge beyond front of mantle, to the eye. The anterior edge of the mantle is emarginated beneath; above it is broadly attached to the head. Sessile arms short; upper ones shortest; third pair largest; tentacular arms slender, extending back to end of body. Upper surface of body opalescent in some lights, thickly spotted with orange-brown, spots most numerous in middle line and extending to upper surface of head, and some also on outer surfaces of arms; anterior part of head white; fins, arms and extremity of body, translucent bluish white; upper surface of eyes opalescent, with silvery blue and red tints; head, below the eyes, silvery white; above eyes, blue. Length to base of arms, 14^{mm}, in alcohol; of mantle above, 8^{mm}; breadth, 7^{mm}; breadth across fins, 16^{mm}."

Derivation of name: Not stated. Form *leukós* (Greek), white + *pterón* (Greek), wing = "with white wings", with reference to the colour of the wide fins: "fins [...] translucent bluish white."

Type locality: "Gulf of Maine, 30 miles E. from Cape Ann" [North-western Atlantic Ocean].

Type repository: Not specified. National Museum of Natural History, Smithsonian Institution, in Washington D.C., according to Sweeney (2001).

Remarks: Verrill (1878) gave a good description of his new species although he did not illustrate it with any drawing. In a subsequent paper, thanks to additional collected specimens, Verrill (1881) further described the species and realized that it deserved to be placed in a genus apart: *Stoloteuthis* (see the genus *Stoloteuthis* herein); he also complemented his description with figures (Verrill, 1881: plt. XXXI figs. 4 and 5, plt. LIV fig. 4). Notably, Verrill (1881: 349) expressed his delight for the sepiolid physical beauty: "This species is an exceedingly beautiful one, when living, owing to the elegance and brilliancy of its colors and the gracefulness of its movements. In swimming it moves its fins in a manner analogous to the motion of the wings of a butterfly. This fact, and its bright colors, suggested the English name that I have applied to it", i.e. butterfly squid.
Stoloteuthis leucoptera was first recorded in the Mediterranean Sea in comparatively recent times (Orsi Relini & Massi, 1991). After entering the Mediterranean from the Atlantic Ocean through the Straits of Gibraltar, it extended its range within the western basin and established a stable population there (Bello, 2011).

Subfamily **Rossiinae** Appellöf, 1898

Work: A. Appellöf, 1898. Cephalopoden von Ternate. *Abhandlungen der Senckenbergischen naturforschenden Gesellschaft*, 24: 561-640.

Original spelling: Rossiae (p. 625).

Diagnosis (in "Fam. **Sepioladae**"; p. 625):
"B. Mantel und Nacken
nicht miteinander verwachsen.
Knorpeliger Nackenschließapparatus vorhanden, vollständig: dorsaler Mantelrand frei. Rückenarme hektokotylisiert. Unterfam. Rossiae. "
{B. Mantle and neck not fused with each other. // Cartilaginous mantle-locking apparatus present, complete: dorsal mantle edge free. Posterior arms hectocotylized. Subfam. Rossiae.}.

Type genus: *Rossia* (*Rossi-a* → Rossi-ae, as the original spelling, → Rossi-inae, corrected).

Other genera originally included in the subfamily: *Semirossia* Steenstrup, 1887.

Remarks: In the identification key proposed by Appellöf (1898) this subfamily stands by itself (key letter B) in contrast to the group characterized by mantle fused with neck (key letter A), namely Sepiolinae, Heteroteuthinae and Sepiadariinae (afterward raised to family rank, Sepiadariidae).

Genus *Rossia* Owen, 1835

Work: R. OWEN, 1835. MOLLUSCA - CEPHALOPODA. Nov. GEN.-ROSSIA. (*Owen.*). *In* J.C. Ross (ed.): Account of the Objects in the Several Departments of Natural History, Seen and Discovered during the Present Expedition. *In* J. Ross (ed.): Appendix to the Narrative of a Second Voyage in Search of a North-West Passage, and of a Residence in the Arctic Regions during the Years 1829, 1830, 1831, 1832, 1833. A.W. Webster, London: xcii-xcix; plts. B (fig. 1) and C.

Original spelling: *Rossia* (p. xciii).

Definition (in "CHAR. GEN.", p. xciii):
"*Corpus* ventricosum; duabus pinnis latis rotundatis, subdorsalibus, antrorsum [*sic!* probably: anteversum] positis; margine antico pallii libero.
Brachia subbrevia, triedra; acetabulis pedunculatis, pedunculis brevissimis; ad basin [*sic!*] brachiorum in duabus seriebus alternantibus, ad apicem in plurimis seriebus aggregatis. Ordo longitudinis parium brachiorum, 1, 2, 4, 3.
Tentacula longitudine corpus æquantia, ad apicem acetabulis pedunculatis minimis obsita.
Gladius, corneus, longitudine lin. ix. æquans, inferius parum dilatatus."
{*Body* ventricose; with two fins semicircular, subdorsal, placed forward; anterior mantle margin free.
Arms very short, three-sided pyramidal; with stalked suckers, their pedicles very short; in double alternate series at the arm base, grouped in several series at the apex. Length sequence of arm pairs, 1, 2, 4, 3.
Tentacles equal to body length, beset by minute pediculate suckers at the apex.
Gladius, horny, 9 lines [1.9 cm] long, little dilated below.}.

Derivation of name: From the family name Ross + suffix *-ia*; "I propose to call the genus *Rossia*, in honour of the Commander of an Expedition, at once so honourable to the enterprising character of the British seaman, and so interesting in its scientific results." (p. xciii).

Gender: feminine.

Type species: *Rossia palpebrosa* Owen, 1835, by monotypy.

Other species originally included in the genus: none.

Remarks: The right publication date of Owen's paper is 1835, not 1834 as almost universally reported in catalogues and other reference works (e.g. Nesis, 1987; Sweeney, 2001; Reid & Jereb, 2005; Bouchet & Gofas, 2014; Young & Vecchione, 2014). Naef (1923) perhaps was the first author to date at 1834 the publication of *Rossia*, as evident in his text (p. 568), although he reported 1835 in the bibliographic citation of Owen's work. Former authors had correctly dated that paper to 1835 (e.g. Gray, 1849; Jatta 1896). Hence, the fixation of Naef's error is most probably due to the uncritical adoption of 1834 by subsequent authors, i.e. without checking the original source, namely the Rosses' book.
The title page of the book containing Owen's paper (**Fig. 7**) shows that: 1) the publication date is 1835; 2) the exact and complete general title is "Appendix to the Narrative of a Second Voyage in Search of a North-West Passage, and of a Residence in the Arctic Regions during the Years 1829, 1830, 1831, 1832, 1833" instead of "Appendix to the Narrative of a Second Voyage in Search of a North West Passage 1829-1833" or similarly abbreviated titles cited in the above-mentioned catalogues and reference works; 3) the book is two-parted and the first part (pagination with Arabic numerals) – which is mainly a creation by the Captain John Ross (1777-1856) – is followed by the Natural History part (pagination with Latin numerals) edited and partly authored by the Commander James Clark Ross (1800-1862), John's nephew, titled "Account of the Objects in the Several

APPENDIX
TO THE
NARRATIVE
OF A
SECOND VOYAGE IN SEARCH
OF A
NORTH-WEST PASSAGE,
AND OF A
RESIDENCE IN THE ARCTIC REGIONS
DURING THE YEARS 1829, 1830, 1831, 1832, 1833
BY
SIR JOHN ROSS, *C.B.*, *K.S.A.*, *K.C.S.* &c. &c.
CAPTAIN IN THE ROYAL NAVY.
COMMANDER, NOW CAPTAIN, JAMES CLARK ROSS, *R.N.*, *F.R.S.*, *F.L.S.*, &c
AND
The Discovery of the Northern Magnetic Pole.
LONDON:
A. W. WEBSTER, 156, REGENT STREET.
1835.
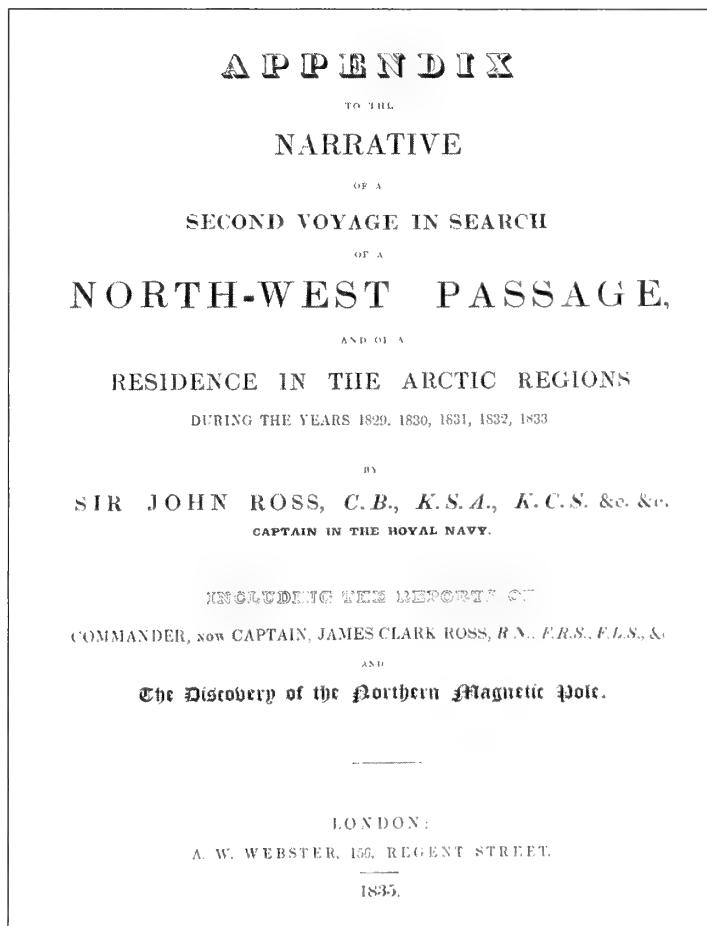
Fig. 7. Title page of Captain John Ross' (1835) work containing Richard Owen's paper with the original description of the genus *Rossia*.

Fig. 7. Frontespizio dell'opera del Capitano John Ross (1835) contenente il lavoro di Owen con la descrizione originale del genere *Rossia*.

Departments of Natural History, Seen and Discovered during the Present Expedition" (**Fig. 8**). This second part includes the description by J.C. Ross of many animals collected during the voyage as well as additional results by other scientists about animals entrusted to them. The only cephalopod brought back from the journey, a sepiolid squid, was examined by Richard Owen who gave his result in a document (signed "R. O.") that was inserted by J.C. Ross, between quote marks, in the chapter "MOLLUSCA - CEPHALOPODA. Nov. GEN.-ROSSIA. (*Owen*.)." This title follows the pattern of the other chapters and was undoubtedly established by J.C. Ross, who also wrote a few opening lines to narrate how the specimen was collected, preserved and entrusted to Owen. Hence, in my opinion, the full correct reference to Owen's paper is that I reported under the item Work. Incidentally, the book by the Rosses, uncle and nephew, bears the title of "Appendix..." because "The narrative of my late voyage in search of a north-west passage, having been increased in its length far beyond my expectations, it became necessary to reserve for the Appendix every thing which did not actually belong to the work itself." (J. Ross, 1835: preface).
There is a couple of printing mistakes in Owen's Latin definition, namely *antrorsum* instead of *anteversum* and *basin* instead of *basim* (see the genus Definition here above), which might indicate that Owen did not check the proofs of his paper and did not take part in the publication process.
As for the naming of the new genus, reference to the expedition Commander and its scientific results (see Derivation of name) indicates that *Rossia* was named after James Clark Ross rather than his uncle the Captain John Ross.
Owen's (1835: xciii) work also includes an extensive and fine description of the specimen for which he proposed the "*nomen triviale*" *Rossia palpebrosa*. Therefore also this species publication date should be corrected to 1835. Incidentally, the exact place where the only described specimen was collected is "Elwin Bay, Prince Regent's Inlet" (J.C. Ross, 1835: xcii), between Somerset Island to the West and Baffin Island to the East, Canada, which is therefore the right type locality, as correctly reported by Sweeney & Young (2002), rather than the general area "Arctic Regions", as reported by Sweeney (2001) and Reid & Jereb (2005) (the type locality is given in the introductory notes by J.C. Ross to Owen's paper, which is appropriate according to Recommendation 76A of the ICZN, 1999).

ACCOUNT

OF THE OBJECTS IN THE SEVERAL DEPARTMENTS OF

NATURAL HISTORY,

SEEN AND DISCOVERED DURING THE PRESENT EXPEDITION.

BY CAPTAIN JAMES CLARK ROSS, R.N., F.R.S., F.R.A.S., F.L.S., &c

HAVING placed the department of Natural History under the exclusive charge of my Nephew, Captain J. C. Ross, whose acquirements in this branch of knowledge have been long known to the public, from the results of the former voyages in which he was engaged, I am indebted to him for the following pages; which have been drawn up by himself, with the assistance of those friends whom he has noticed in his own Preface.

JOHN ROSS.

v 2

Fig. 8. Opening page of the second part of John Ross' (1835) work. Edited by James Clark Ross, it contains the expedition scientific results, including the genus *Rossia* original description by Richard Owen.

Fig. 8. Pagina d'apertura della seconda parte dell'opera di John Ross (1835). Contiene i risultati scientifici della spedizione a cura di James Clark Ross, compresa la descrizione originale di *Rossia* di Richard Owen.

Species *Rossia macrosoma* (delle Chiaje, 1830)

Work: S. DELLE CHIAJE, 1830. Memorie sulla storia e notomia degli animali senza vertebre del Regno di Napoli (Figure); [Società Tipografica], Napoli: plts. LXX-CIX.

Original spelling and combination: *Sepiola macrosoma* (plate LXXI).

Indication (plate LXXI):
Figs. 1 and 11 in plate LXXI (**Fig. 9**).

Derivation of name: Not stated. From *makrós* (Greek), wide + *soma* (Greek), body = "large bodied", with respect to the other "*Sepiola*" species known to the Author.

Type locality: Not reported, however in the surroundings of Naples, Tyrrhenian Sea, western Mediterranean (*cf.* delle Chiaje, 1841: 10, note 2).

Type repository: Not specified.

Remarks: The description consists of just some figures illustrating the species, which represents an indication according to Art. 12.2.7 of the ICZN (1999). Plate LXXI caption reports "1, 11 *Sepiola macrosoma*", but indeed it also contains some anatomical details numbered 2-9 most probably pertaining to the same species. Delle Chiaje published at his own expenses four textual volumes of "Memorie sulla storia e notomia degli animali senza vertebre del Regno di Napoli" between 1823 and 1829. Each volume was complemented by several plates; those of the first volume were issued in 1822, i.e. in advance of the text issued in 1823. Afterwards, in 1830, delle Chiaje took care of
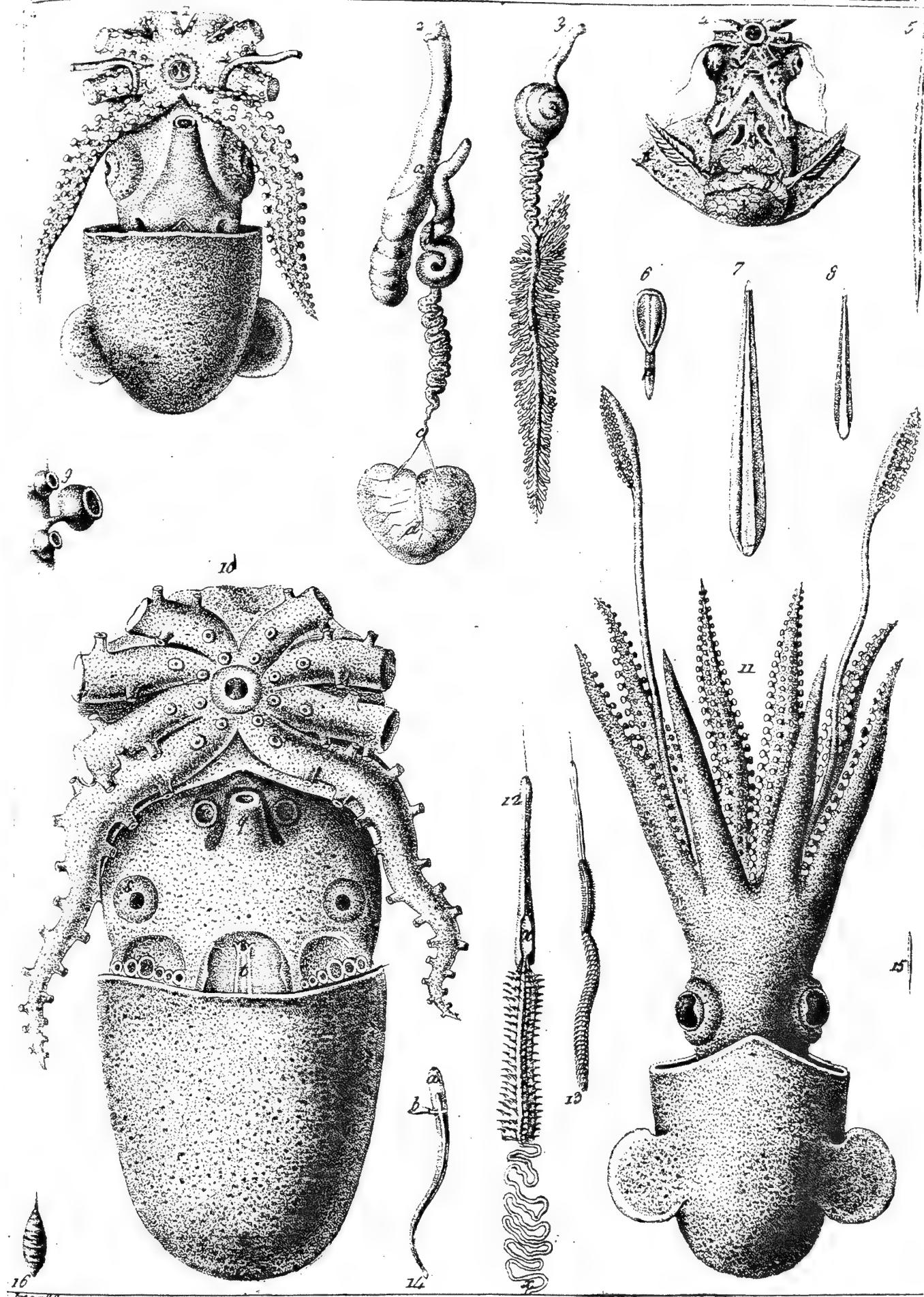
Fig. 9. Plate LXXI from delle Chiaje (1830) depicting *Sepiola* [= *Rossia*] *macrosoma* in figs. 1 (in the upper left corner) and 11 (in lower right corner).

Fig. 9. Tavola LXXI da delle Chiaje (1830) raffigurante *Sepiola* [= *Rossia*] *macrosoma* nelle figure 1 (in alto a sinistra) e 11 (in basso a destra).

the engraving and publication of additional plates, numbered LXX-CIX, depicting animals that he had observed but whose descriptions he did not publish since they "avrebbero richiesto altri due volumi di stampa" {would have required two more printed volumes} (delle Chiaje, 1841: xiii, note 1). Moreover, in the same note the Author stated that "a fermarne la data di pubblicazione sotto ciascuna di esse non ommisi di fare scolpire: *incisa* 1830" {in order to fix the publication date, I took care that they carved below each plate: *engraved* 1830}.

The sepiolid squid figured in plate LXXI is certainly *Rossia macrosoma* because of the free dorsal mantle margin (a character of the Rossiinae) and the presence of four rows of suckers on the arms (which excludes the only other Mediterranean rossiine, namely *Neorossia caroli*).

Delle Chiaje gave a description in words of his species in a later work where he also stated that "In marzo 1827 n'ebbi parecchi individui, fra quali contansi que' da me spediti a Ferussac [*sic!*] pel Museo di Storia naturale di Parigi" {In March 1827 I received many individuals [of *R. macrosoma*], among which there were those sent by me to Férussac for the Natural History Museum in Paris} (delle Chiaje, 1841: 10). The specimens in the MNHN in Paris, if still existing, cannot be deemed part of the type series – in fact Sweeney (2001) reports doubtfully such possibility – since Art. 72.5.6 of the ICZN (1999) states that "In the case of a nominal species-group taxon based on an illustration or description [...] the name-bearing type is the specimen or specimens illustrated or described" (incidentally, delle Chiaje did not mention on which specimen(s) he had based his drawings of *R. macrosoma*). Nonetheless, in the case the actual holotype is not found, I believe that a fine choice for a neotype would be one of the specimens sent to Férussac by delle Chiaje, if accessible and in fair conditions.

Genus *Neorossia* Boletzky, 1971

Work: S.v. Boletzky, 1971. *Neorossia* n.g. pro *Rossia* (*Allorossia*) *caroli* Joubin, 1902, with remarks on the generic status of *Semirossia* Steenstrup, 1887 (Mollusca: Cephalopoda). *Bulletin of Marine Science*, 21: 964-969.

Original spelling: *Neorossia* (p. 968).

Diagnosis (p. 968):
"Typical Rossiinae with dorsal adhesive organ at the entirely free mantle border; buccal membrane with six lobes. Ink sac reduced to a narrow tube, no ink secretion in the rudiment of the ink gland. Anal valves completely reduced."

Derivation of name: Not stated. From the prefix *neo-* (Greek), new, and the genus name *Rossia* = "new *Rossia*".

Gender: feminine.

Type species: *Rossia caroli* Joubin, 1902, by monotypy.

Other species originally included in the genus: none.

Remarks: In addition to the concise diagnosis, Boletzky (1971) thoroughly described the peculiarity of his new genus and examined its relationships with the other genera of the Rossiinae; he also lucidly discussed the reasons for erecting a new genus. The description is complemented by a set of four figures, two of them clearly depicting the vestigial anal flaps and the reduced ink sac (**Fig. 10**). An "Artificial key to the genera of Rossiinae" is also given.

A second species was added to this genus later on, namely *Neorossia leptodons* Reid, 1992.

Species *Neorossia caroli* (Joubin, 1902)

Work: L. Joubin, 1902. Observations sur divers Céphalopodes - Sixième note: Sur une nouvelle espèce du genre Rossia. *Bulletin de la Société Zoologique de France*, 27: 138-143.

Original spelling and combination: *Rossia Caroli* (p. 143).
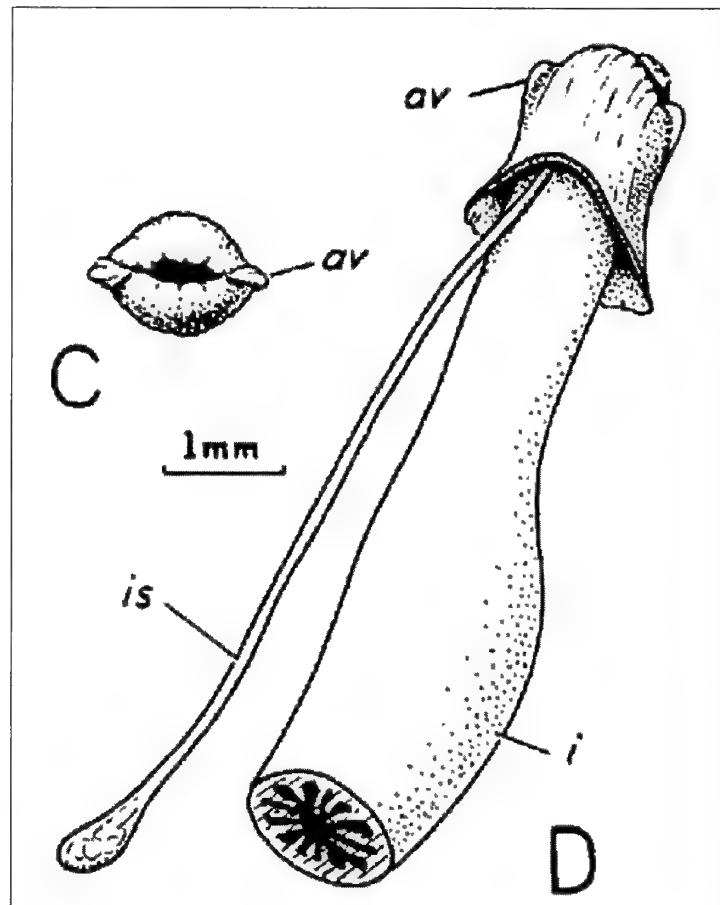
Fig. 10. *Neorossia*. Details of Boletzky's (1971) figure 1. **C.** anterior view of rectum with anus and relics of anal valves (av); **D.** terminal part of intestine (i) with rudiment of ink sac (is) running into the rectum.

Fig. 10. *Neorossia*. Dettagli della figura 1 da Boletzky (1971). **C.** vista anteriore del retto con l'ano e le vestigia della valvole anali (av); **D.** parte terminale dell'intestine (i) con la sacca del nero rudimentale (is) terminante nel retto.

Description (p. 139):
"Le caractère le plus tranché est l'énormité de la tête par rapport au corps qu'elle dépasse sensiblement en diamètre; elle est pourvue d'yeux extraordinairement saillants et gros qui se rejoignent presque sur la ligne médiane de la tête.
Le corps est au contraire relativement petit et conique; sa masse est inférieure à celle de la tête. Il parait d'abord absolument lisse, mais quand on laisse sécher l'épiderme de l'animal, on voit apparaître quelques petites papilles très basses, très peu saillantes et qui facilement passeraient inaperçues. Les nageoires sont petites, implantées très haut. Les bras sont forts, pourvus de deux rangées seulement de ventouses sur toute leur longueur.
Tels sont les caractères les plus importants."
{The most distinct character is the enormous size of the head with respect to the body, which it exceeds markedly; it bears extraordinarily protruding and large eyes that almost join with each other on the head middle line.
On the contrary the body is relatively small and conical; its mass is smaller than that of the head. At first sight it looks smooth, but when the animal epidermis is let to dry out, one sees some small papillae appear very low, very little projecting and quite negligible. The fins are small, placed very high. The arms are strong, with only two rows of suckers throughout their length.
These are the most important characters.}.

Derivation of name: From Carolus, the Latinized name Carlos, in the genitive case; "à [l']espèce nouvelle [...] je donne le nom de *Rossia Caroli* en l'honneur de S. M. le Roi don CARLOS, de Portugal." {to the new species I give the name of *Rossia Caroli* in honour of H. M. the King don CARLOS of Portugal.}.

Fig. 11. *Rossia* (= *Neorossia*) *caroli* ventral view. Photograph from Joubin (1902).

Fig. 11. *Rossia* (= *Neorossia*) *caroli* in norma ventrale. Fotografia da Joubin (1902).

Type locality: The Azores, North Atlantic Ocean; "recueillis [...] aux îles Açores" {collected at the Azores islands}.

Type repository: Not specified; Musée Océanographique in Monaco (Principauté), according to Belloc (1950).

Remarks: Joubin gave a four pages long description of the single specimen collected, a male, providing also two photographs of the whole animal (front and dorsal views, respectively) (**Fig. 11**). The detailed description was followed by the comparison of the new species to the other known rossiines with two rows of suckers on arms.
The specimen was collected during the 1901 campaign to the Azores of the *Princesse Alice*, the scientific ship of the Prince Albert the First of Monaco, and entrusted to Joubin.

Discussion

The order Sepiolida is represented in the Mediterranean only by the Sepiolidae, which is the most speciose cephalopod family in this sea. This family has been traditionally and stably subdivided into three subfamilies, namely Sepiolinae, Rossiinae and Heteroteuthinae, since Appellöf's (1898) proposal. Indeed, it is clear now that some rearrangements are necessary to cope with recent systematic discoveries (cf. Young, 2007).
The Mediterranean sepiolids encompass taxa described as early as the 1817 (Sepiolidae, *Sepiola*, *Sepiola rondeletii*) and very recently (*Sepiola bursadhaesa*). It is quite instructive to compare the earliest descriptions by Leach (1817) to the ensuing ones till the present. This comparison offers an insight in the evolution of taxonomic description patterns from Leach's very synthetic and quite ambiguous to unequivocal modern ones such as Boletzky's (1971) and Bello's (2013). Indeed, Leach (1817) in dealing with *Sepiola rondeletii* did not mean to describe a new genus and a new species, though the descriptions of intentional new species are also very synthetic (cf. *Cranchia scabra* and *Loligo Banksii* in Leach, 1817). The historical analysis of the taxonomic descriptions displays also the evolution of technology and, specifically, photography: Joubin (1902) employed a box camera and the photo-chemical process to portray the whole animal (one of the very first examples in teuthology) (**Fig. 11**) whereas Bello (2013) used a digital camera attached to a stereomicroscope to depict anatomical details (**Fig. 12**).
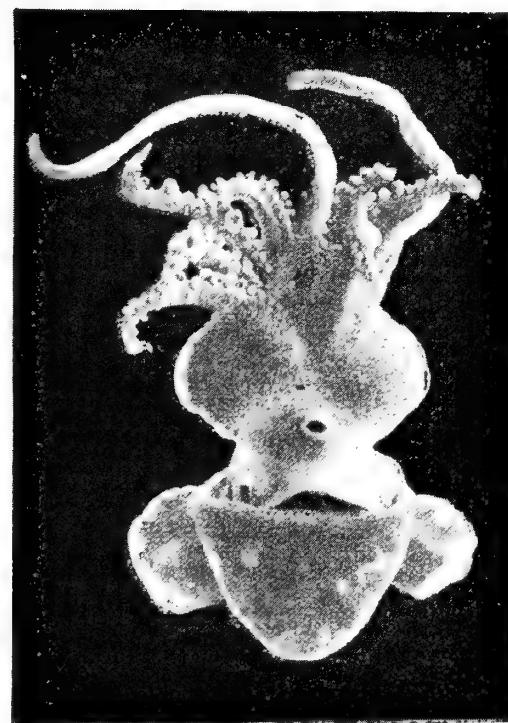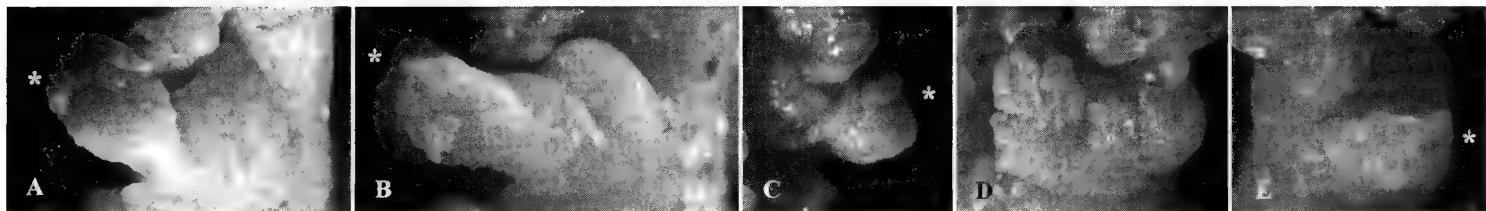
Fig. 12. Copulatory apparatus of five *Sepiola bursadhaesa* male paratypes; the asterisk (*) marks the tubercle. From Bello (2013: fig. 8).

Fig. 12. Apparato copulatore di cinque paratipi, maschi, di *Sepiola bursadhaesa*; l'asterisco (*) indica il tubercolo. Da Bello (2013: fig. 8).

The turning point in the history of sepiolid taxonomy is represented by Adolf Naef's (1883-1949) works (1912a, b, c, 1916, 1923). He was a keen morphologist and based his comparative examination of many sepioline specimens on anatomical details that had been ignored by previous workers. In this respect the appraisal of Naef's (1912b) and Levy's (1912a) descriptions of the same species is quite instructive (see the Remarks to *Sepiola steenstrupiana*). Incidentally, the case of *S. steenstrupiana* vs. *Sepiola tenera*, in addition to exposing Levy's unethical conduct, shows Naef's rectitude and, at the same time, his naiveté in dealing with a misbehaving colleague. Naef was the first teuthologist to discover the paramount importance of the hectocotylus to discriminate sepioline entities from each other. Surprisingly to us, he became fully aware of the species-specificity of the bursa copulatrix only afterwards (Naef, 1923) so that the latter character was not taken into account in describing his many new *Sepiola* and *Sepietta* species. Naef's work lucidly displayed and shaped the Mediterranean sepioline biodiversity. Before him, all sepiolines were lumped in just the genus *Sepiola* and the nominal species *Sepiola rondeletii* comprised virtually all European *Sepiola* species and even species belonging to other genera. Has a matter of fact, the species we now recognize as *S. rondeletii* was characterized by Naef's (1912b) comparative diagnoses.
Following Gofas' (2013) suggestion, I took advantage of this review paper to assert the validity of the binomen *Sepiola rondeletii* Leach, 1817 and to dismiss once and for all *Sepia sepiola* Linnaeus, 1758.
Lastly, I must point out the incorrectness of the almost universally used spelling *rondeleti*, i.e. with one final *-i*, which according to the ICZN (1999: Art. 33.4) must be corrected, as well as the many wrong citations of either the author or the publication date or both of this specific name.
I hope to provide, with the present paper, a documented reference tool for clearing up the nomenclature of the Mediterranean Sepiolidae taxa.

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APPENDIX 1

List of 26 papers citing *Sepiola rondeletii* Leach, 1817, published by more than 10 authors in the last 50 years (cf. ICZN, 1999: Art. 23.9.1.2)

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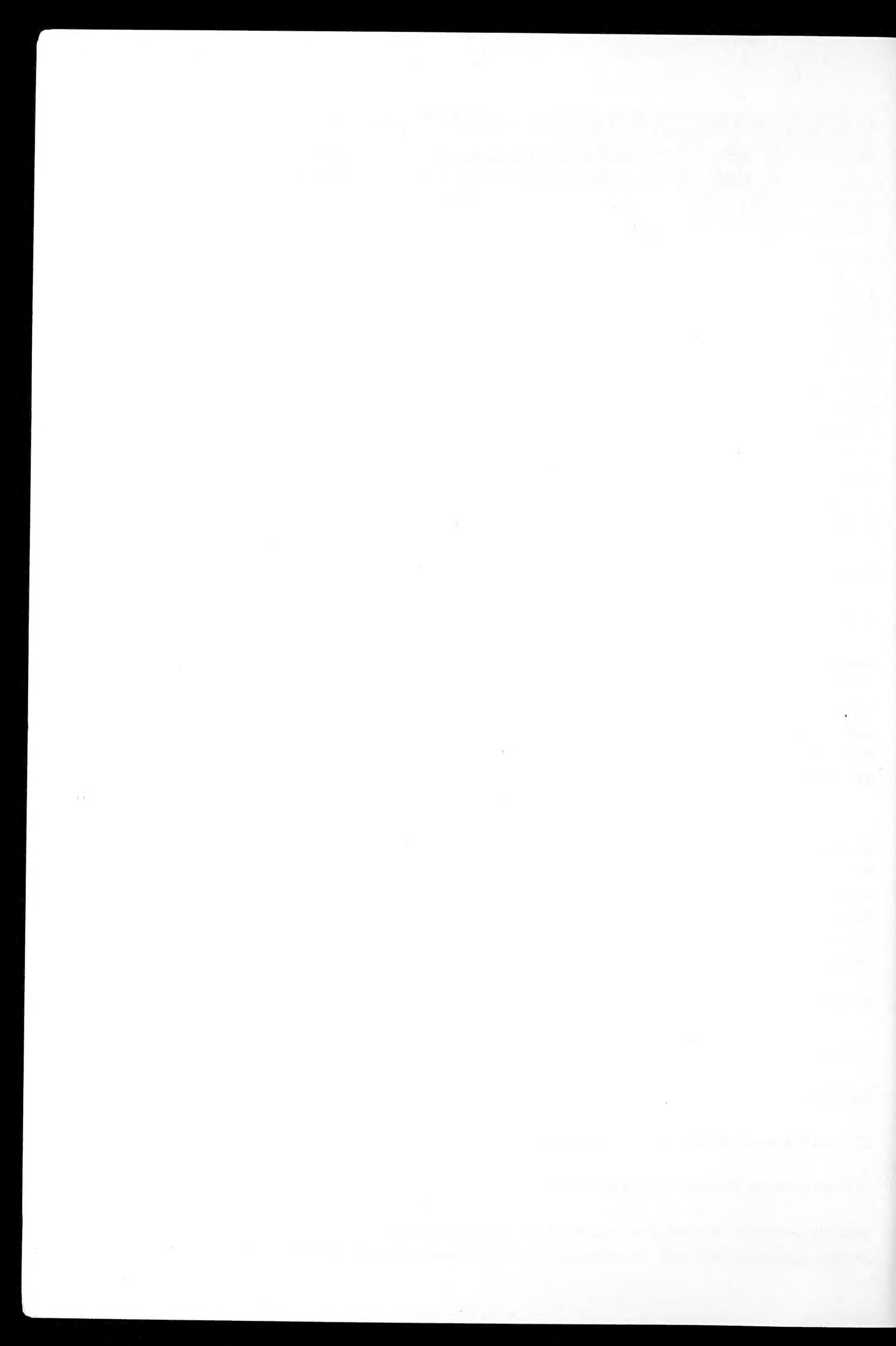
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Example of systematic hierarchy and synonymy:
Family Cardiidae Lamarck, 1809
Subfamily Cardiinae Lamarck, 1809

Genus *Acanthocardia* Gray, 1853
(type species *Cardium aculeatum* Linné, 1758)

Cardium indicum Lamarck, 1819
(Fig. 1A-D, Fig. 2C)

Cardium hians Brocchi, 1814: p. 508, pl. 13, fig. 6 (non Spengler, 1799).
Cardium indicum Lamarck, 1819: p. 4.
Cardium (Cardium) indicum Lamarck – Fischer-Piette, 1977: p. 112, pl. 10, fig. 4 (type).

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Example of citations:
... reported by Richardson & Smith (1965)
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Salas C., 1996. Marine Bivalves from off the Southern Iberian Peninsula collected by the Balgim and Fauna 1 expeditions. *Haliotis*, **25**: 33-100.
Grill B. & Zuschin M., 2001. Modern shallow- to deep-water bivalve death assemblages in the Red Sea – ecology and biogeography. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **168**: 75-96.
Boss K.J., 1982. Mollusca, in Parker S.P. (ed.), *Synopsis and Classification of Living Organisms*. Vol. 1. McGrow-Hill, New York: 945-1166.
Carter J.G., Campbell D.C. & Campbell M.R. 2000. Cladistic perspectives on early bivalve evolution, in Harper E.M., Taylor J.D. & Crame J.A. (eds), The Evolutionary Biology of the Bivalvia. *Geological Society, London, Special Publications*, **177**: 47-95.
Vokes H.E., 1980. *Genera of the Bivalvia: a systematic and bibliographic catalogue (revised and update)*. Paleontological Research Institution, Ithaca, Edwards Brothers Inc., 307 pp.

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